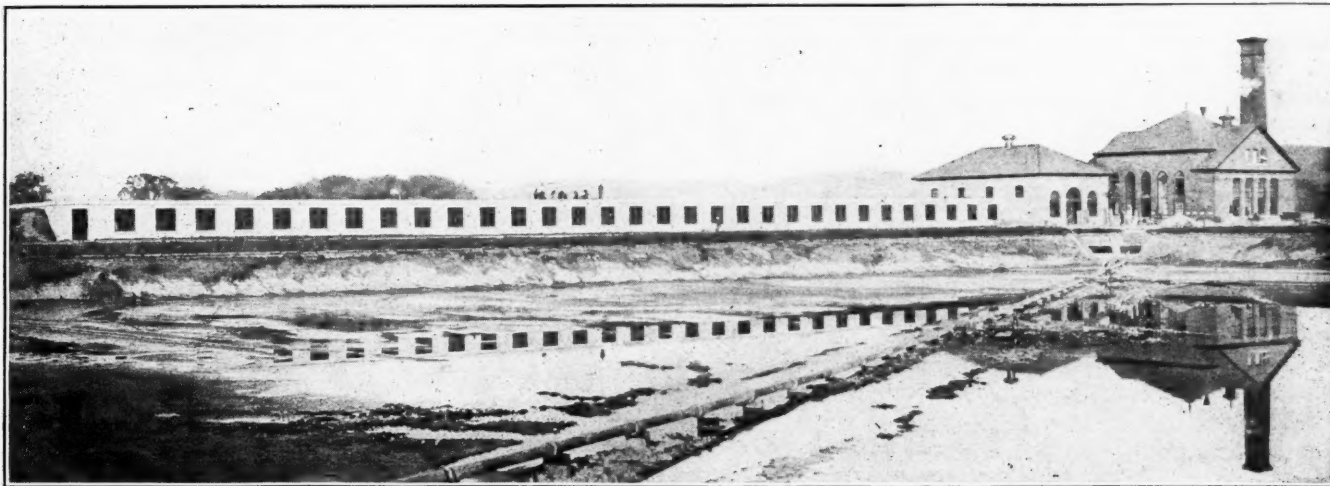


# Municipal Journal

Volume XXXII.

NEW YORK, APRIL 11, 1912.

No. 15



PRE-FILTER BUILDING. PUMPING STATIONS AT EXTREME RIGHT. SEDIMENTATION BASIN (EMPTY) IN FOREGROUND.

## ALBANY WATER FILTRATION

### Preliminary Rapid and Secondary Slow Sand Filtration—Methods and Results Last Year—Cost and Efficiency of Double Compared with Single Efficiency—Control of Sand Bed Clogging

ABOUT fifteen years ago the city of Albany constructed a system of slow sand filters for purifying that portion of its water supply—about two-thirds of the entire consumption of the city—which was drawn from the Hudson River, which was highly polluted with sewage. These filters at the time of their construction represented the highest advance of the art at that time. Although the population of the city has increased only about 6 per cent. in the last twenty years, the rate of consumption has been continually increasing, and by 1905 the capacity of the filters had practically been reached. Moreover, those sections of the city which were furnished with water from gravity supplies objected to the occasional turbidity and algae troubles, and were anxious to be supplied with filtered water. To meet the request of these districts and provide sufficient capacity for all purposes and future growths would have required nearly doubling the capacity of the filtration plant, the cost of which would have been about \$400,000. While this capacity would not have been required throughout the year, at certain low stages of the river during the winter seasons the organic matter in the water became excessively high, while at the same time the filters were working with their least efficiency, and the capacity of the plant fell from 14,000,000 gallons per day to 12,000,000 or less. In the spring of 1905 the commissioner of public works, Wallace Greenalch, having had his attention directed to the preliminary filters about to be installed in Philadelphia, decided to experiment with the use of such filters in treating the Albany water. He accordingly erected in the engine

room at the filtration plant experimental preliminary filters, which were started about November 1, 1905, and continued with few interruptions until August 19, 1907. His object was to learn whether it would be possible to increase the rate of operating existing slow sand filters from 3,000,000 to 6,000,000 gallons per acre per day without lowering the efficiency of purification. The principal matter to be removed by the pre-filters was an excessive amount of organic pollution rather than turbidity. In these experiments the average rate of filtration of the slow sand filter receiving pre-filtered water was 5,700,000 gallons per acre per day, and the total reduction of bacteria in the experimental plant averaged 99.9 per cent., as compared with 99.57 per cent. in the main plant.

From these experiments it was concluded that sedimentation would be necessary before applying the water to the pre-filters; that it was practicable to remove by such filter the greater part of the organic matter, bacteria and turbidity from the settled water; that it would be practicable to successfully operate a slow sand filter receiving pre-filtered effluent at a rate of 6,000,000 gallons per acre per day and obtain as good results as when filtering settled water at a rate of 3,000,000 gallons per acre per day, and that, considering the cost of the plant, double filtration would be less expensive than single filtration.

It was concluded to adopt the pre-filtration method, and a preliminary filter plant was constructed, consisting of 16 units, each having a filtering area of 810 square feet. The beds contain 12 inches of graded gravel from  $1\frac{1}{2}$

inches to 1-16-inch in greatest dimensions, and 24 inches of sand having an effective size of 0.42 mm. and a uniformity coefficient of 2.0. The beds are washed by water only, with a vertical rise of 1 foot per minute, the average duration of wash being 10 minutes. It is claimed by the Jewell Filtration Co. that the method of control of the filters from one point is an infringement of their patents, and this matter is now in the courts for settlement.

In connection with the pre-filters five pumping engines were installed, one being an additional raw water pump for lifting the water to the sedimentation basin, two pumps for lifting the settled water to the pre-filters, and two wash water pumps. The settled water pumps each consisted of a 30,000,000 gallon centrifugal pump acting against a total static head of 9 feet. For pumping pre-filtered water for washing the pre-filters two centrifugal pumps with a capacity of 7,000 gallons per minute against a maximum dynamic head of 35 feet were provided.

The purification plant is on the banks of a "back channel" of the Hudson River. A 5-foot reinforced concrete conduit takes water from an intake chamber in the main channel of the river and leads it to the pumping station at the northeast corner of the property. The plant as now used is as follows: A sedimentation basin, 600 feet long north and south by 382 feet wide, and containing 14,600,000 gallons, occupies almost the entire water front of the property, most of the balance being occupied by the building which contains the preliminary filters. These filters



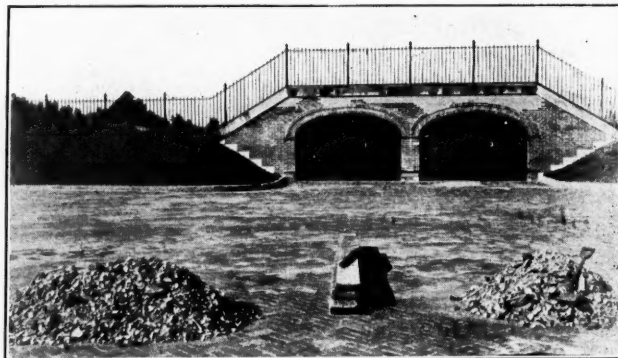
EAST END OF SEDIMENTATION BASIN.

Showing inlet branches. Pumping station and pre-filters in background.

extend across the north end of the sedimentation basin, the building containing them being about 390 feet long by 73 feet wide. Each of the preliminary filters in this building is 18 feet by 54 feet, the entire construction being of reinforced concrete. Directly west of the sedimentation basin are the eight slow sand filters, four on each side of a central court, at the west end of which is a pure water reservoir 94 feet square and 9 feet deep. From this court there are entrances to the eight filters arranged in pairs, two filters being accessible through each double entrance. At the easterly end of the court, on the west bank of the sedimentation basin, is the chemical laboratory. About 100 feet west of this is the sand washer, and near the westerly end of the court is the building used for preparing and applying the hypochlorite. Each of the slow sand filters has an area of 120 feet 4 inches by 258 feet.

The water drawn through the intake conduit is discharged into the sedimentation basin through eleven branches from a 30-inch main. The water from the sedimentation basin passes through a channel into the southeast corner of the pre-filter house, in which it is received by a semi-circular concrete channel extending across the ends of all the pre-filters. From this it enters each filter through a 12-inch disc valve near the bottom of the channel, which admits it to the top of the sand bed. The filtered water is collected in lateral ducts through

which it flows to a main collector extending along the longitudinal center line of each filter tank; the water entering the ducts through vertical brass strainer tubes with perforated sides and closed tops, set 9 inches between centers. The main collector leads the water to a chamber under the operating gallery through a regulating valve which is operated by a float, there being also a gate valve on the



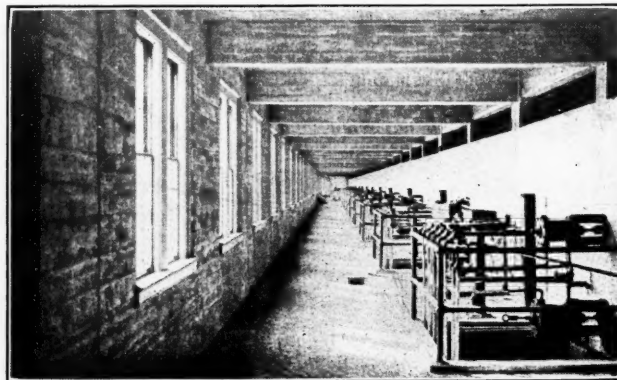
DOUBLE ENTRANCE TO SLOW FILTERS.

main collector outlet by which it can be shut off entirely. In this same chamber is an 18-inch wash-water main, a branch from which connects with each collector, through which wash-water can be admitted to the under sides of the filters.

In July, 1909, the city contracted with E. M. Nichols to furnish two sand separators or washers similar to those which had been used in the Philadelphia filtration system, the cost of these being \$1,550. These were delivered during October of that year and greatly lowered the cost of washing the sand in the slow filters.

The pre-filters were first placed in operation on October 29, 1908, and during the first year operated at an average rate of 52 million gallons per acre per day. Being started late in the fall, they did not have time to ripen properly before cold weather set in, and as a result the average reduction of bacteria (incubated on gelatine at 68 degrees F.) was but 50 per cent. prior to April 10, but from April 10 to September 30, 1909, the average reduction was 92 per cent.

During the fiscal year ending September 30, 1911, the average rate of filtration by the slow filters was 4,018,000 gallons per acre per day. The average rate per day during a run between scrapings for each of the eight filters varied from a maximum of 4.9 million gallons to 2.8 million gallons, although five of the eight did not fall below 3.4 million gallons. The maximum rate at which any slow sand filter was operated was six million gallons per acre, and each of the filters has been operated at a 5½ million gallon rate when necessary, with good results. The average quantity filtered per acre per run was 121,911,000 gallons. The length of run between scrapings varied from a maximum of 88.3 days to a minimum of 7.3



OPERATING GALLERY OF PRE-FILTERS.



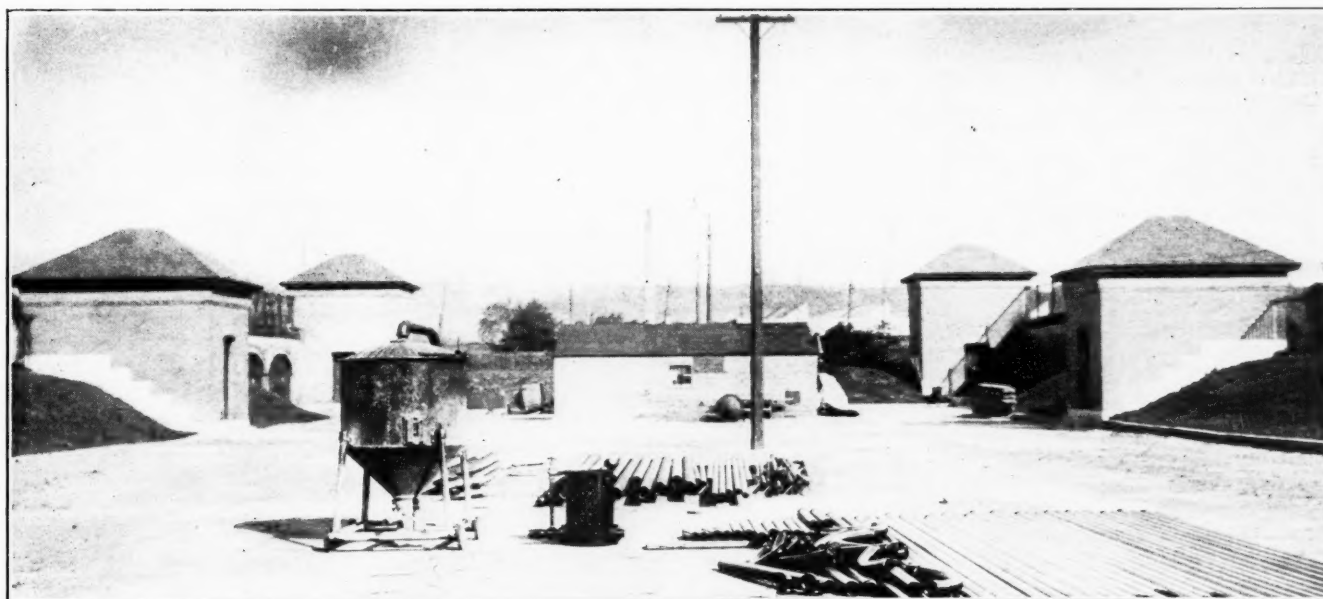
days, and the quantity filtered per acre from a maximum of 381,344,000 to a minimum of 24,696,000, the former being between April 2 and June 29 and the latter between February 21 and March 21. During the year ending September 30, 1908 (the last fiscal year before the use of the pre-filters) the average rate of filtration was 2,572,000 gallons per acre per day and the average amount filtered between scrapings was 79,655,000 gallons.

The sedimentation basin was cleaned by flushing and carts between November 1 and November 11, 1910, and 1,770 tons of silt were removed at a total cost of \$191.28. This basin removed 23.3 per cent. of the bacteria and 34.6 per cent. of the turbidity in the raw water.

The preliminary filters were operated at an average rate of 80.5 million gallons per acre per day, with an average length of run of 35 hours. Four per cent. of their gross yield was used for washing them, the average wash lasting for 10 minutes with a one-foot vertical rise per minute. These filters removed on the average 81 per cent. of the bacteria incubated on gelatine at 68 degrees F. and 74 per cent. of the acid colonies incubated on litmus lactose bile agar, 72 per cent. of the turbidity and 10 per cent. of the color. The efficiency of the filters was lowest during the winter months, the average removal of bacteria incubated on gelatine from November 1 to April 1 being 70 per cent., while for the remainder of the year it was 88.3 per cent.

of the tank, is allowed to enter the water. Commencing on November 19, 1910, and continuing throughout the remainder of the fiscal year, hypochlorite was applied to the effluent of the slow sand filters, the average application being .35 parts per million of available chlorine, the maximum 0.5 parts and the minimum 0.2. This treatment was originally used for additional safety during the cold months, when the filter efficiency was lowest, and was continued during the summer in order to determine whether by such treatment the number of cases of typhoid and diarrheal diseases could be diminished. Owing to the large number of factors entering into the causation of these diseases it is impossible to determine from one season's record whether such effect has been produced, but two or three years' continuous application will be necessary before a definite conclusion can be reached.

The cost of purification during the fiscal year was as follows: Pumping station, including all labor, coal, repairs, etc., \$2.64 per million gallons; cleaning sedimentation basin, 3 cts. per million gallons; preliminary filters, including repairs, etc., 53 cts., of which 6 cts. was for washing sand. Slow sand filters cost \$1.04, consisting of the following items: scraping beds, 8 cts.; ejecting scraped sand, 13 cts.; washing and replacing sand, 2 cts.; reforking beds, 1 ct.; removing ice from filters, 2 cts.; watchman, 9 cts.; incidental labor, 57 cts.; repairs and supplies, 10



COURT, LOOKING TOWARD THE WEST. FILTER ENTRANCES ON THE RIGHT AND LEFT. SAND WASHER IN FOREGROUND.

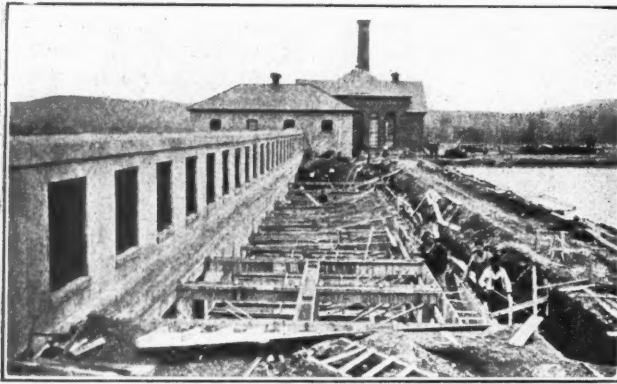
The entire sand layer of these filters was ejected, washed and replaced twice during the year.

As stated above, the average effective size of the sand in the pre-filters was .45 mm. In December, 1909, a sand of an effective size of .65 mm. was placed in one filter and proved more advantageous than the finer sand, giving as great efficiency, while the duration of runs between washings was materially lengthened and the percentage of wash water required was reduced. The average length of run for the filter supplied with this sand was 55 hours, the average rate 79.3 million gallons per acre per day and the amount of wash water 2.6 per cent. Based on this experiment it was decided to equip another preliminary filter with sand having an effective size of 1.2 mm. with a view to determining that size of sand which will operate most economically and maintain the standard of efficiency desired.

It is believed that this was the second municipal plant to make use of calcium hypochlorite, this sterilizing agent having been employed soon after its adoption on the Boonton supply. In using the chlorine, the solution is settled and only the liquid, which is drawn off from the surface

cts.; egg coal, 2 cts. (The removal of ice from the filters has given considerable trouble in the past, although the filters are covered with a concrete roof of groined arches. It is believed, however, that there is not sufficient earth covering over these, considering the severity of the winters in Albany. Arrangements have been made for floating the ice off of the filters by raising the water in them and allowing it and the ice to pass over the overflow weirs.) The laboratory expenses were 53 cts. per million gallons, comprising 23 cts. for chemicals, 20 cts. for laboratory help, 8 cts. for supplies, 2 cts. for gas. Attendants, repairs and supplies at the hypochlorite plant cost 26 cts. per million gallons. These, with 29 cts. for general superintendence, brings the total cost per million gallons filtered to \$5.32, this not including any interest or depreciation on the plant.

A comparison has been made between the cost of double filtration during the year 1910-1911 and single filtration during the eight years from 1899 to 1907. The quantity filtered per day increased from an average of 13,200,000 gallons during the earlier period to 20,342,000 gallons during the latter, and this itself should have resulted in a



FRONT OF PRE-FILTER BUILDING.  
Placing forms for wash-water reservoir.

lower cost for some of the items. Removing sediment increased from 1 ct. to 3 cts. per million gallons. In the operation of the slow sand filters, the cost of scraping sand decreased from 33 cts. to 9 cts.; washing and replacing sand from 57 cts. to 4 cts.; reforking sand from 3 cts. to 1 ct.; incidental and lost time increased from 38 cts to 54 cts.; supplies and repairs increased from 13 cts. to 19 cts., and removing ice cost 3 cts. during the latter period, but was not necessary during the former. This gives a total reduction in operating cost of the slow sand filters from \$1.69 to 97 cts. The operation of the preliminary filters cost 58 cts., which, added to the 97 cts., gives a total cost of filtration during the last fiscal year of \$1.58, as against \$1.70 previous to the installation of the pre-filters. It is seen that most of this decrease is in the cost of scraping, removing, washing and replacing the sand. A large part of this reduction is undoubtedly due to the decreased clogging of the sand filters owing to the pre-filtration of the water, although a part of it probably should be credited to the use of the Nichols sand separator. A comparison of the same two periods shows an increase of laboratory expenses from 32 cts. to 56 cts. per million gallons, most of this being in the wages of assistants, which increased from 1 ct. to 22 cts. per million gallons. The total of all items, including pumping and superintendence, is \$5.04 per million gallons during the earlier period and \$5.02 during the latter. As the pre-filters cost for construction only about \$150,000, as compared to \$400,000, the estimated cost of duplicating the slow sand filtration plant, it would appear that the plant adopted effected a saving of \$250,000, which, allowing 7 per cent. for interest and depreciation, represents a saving of \$17,500 a year.

As to the efficiency of the double filtration, George E. Willcomb, chemist in charge of the laboratory, reports that during the last fiscal year the sedimentation basin retained approximately 0.11 tons of silt per million gallons passing through it, 23.3 per cent. of the bacteria and 34.6 per cent. of the turbidity. The maximum number of bacteria in the effluent from the pre-filters was 62,000, during the week of December 17, and the minimum was 210 during the week of October 8. The number exceeded 700 per cc. only once between May 20 and October 22, while from October 29 to May 13 the number exceeded 1,000 in all cases. The effluent from the slow sand filters contained 10 or less bacteria continuously from May 20 to October 30, and less than 100 at all times, except between November 19 and December 31. The maximum number of bacteria was 285 during the week of December 24. For the first time in the history of the plant the total efficiency of the entire plant was approximately 99.9 per cent. during the fiscal year.

The regular routine of sampling the water was as follows: Two samples daily from the river, one sample from the settling basin, six samples from the different primary filter effluents each day, one sample from each of the sec-

ondary filters, two samples from the pure water well and one from the force main at the central station. Once each week samples were collected from each of the main reservoirs and from the three main divisions of the distribution system. The determinations made on each sample were: the total count on gelatine at 20 degrees centigrade; total and acid counts on litmus lactose bile agar at 35 degrees centigrade; the presumptive tests for *B. coli*, which were in all cases confirmed upon the production of gas. Determinations for free and albuminoid ammonia and oxygen consumed were made on average weekly samples from the suction well, basin, primary effluent and pure water well; an aliquot portion of each sample being added daily to a bottle containing chloroform, which was analyzed at the end of the week.

Careful watch was kept of the sand in the slow filters. Samples of sand were taken from a number of depths by a special boring device and the amount and character of the sediment carried were determined, in which way the penetration into the sand of silt, bacteria and organic matter was learned, and sub-surface clogging remedied before it became serious. From these analyses it has been shown that most of the silt and bacteria penetrate to a limiting depth of 10 inches, consequently before any new sand is replaced the old is completely removed to a depth of 10 inches and fresh sand added. By these means the turbidity of the sand is kept below 800, organic nitrogen below 0.35 parts per 10,000 and the oxygen required below 5.5 parts per 10,000; this being, therefore, to all intents and purposes a clean sand.

The eight slow filters were cleaned 93 times, or an average of 11½ times each. During the year 316,386 sq. yds. of filter surface was scraped in 2,663 man-hours; 5,100 cu. yds. of sand were washed and replaced in 2,897 man-hours; 2,666 cu. yds. were replaced from the storage pile in 1,666 man-hours; 5,572 cu. yds. of sand were ejected in 4,126 man-hours, an average of 48.54 man-hours per cleaning and an average of 65.5 cu. yds. per cleaning.

Owing to the enormous amount of silt and organic matter passing onto the pre-filters, these received two supplemental washes during the year, at which times the entire sand layer down to the gravel was ejected and replaced by means of the Nichols separator. This reduced the loss of head at a 70 million gallon rate from 2 feet to 0.8 feet.

### TESTS OF PAVING BRICK

THE Engineering Experiment Station of Iowa State College has made several series of tests of paving brick in both old type and new type rattlers, to determine the effect of the change of type. One series has been tabulated, and we give the averages below, through the courtesy of A. O. Anderson, of the Experiment Station. In each of these tests ten bricks or blocks were used as a charge, with the shot specified for each type. Using the 1901 rattler, No. 1 blocks averaged 20.34% loss, and 22.90% with the 1911 rattler; while No. 2 blocks gave 22.28% and 26.63%, respectively. Of brick tested in the same rattler, No. 1 gave 18.70% in the old and 25.09% in the new, and No. 2 averaged 24.91% and 29.50%, respectively.

The old type shot were then placed in the new rattler and the new type in the old rattler, under which conditions No. 1 block showed a loss of 17.53% in the old and 18.26% in the new, and No. 1 brick 20.02% and 22.52%, respectively. These show No. 1 brick as losing 6.39% more with new rattler and new shot than with the old, and 2.50% more with new rattler and old shot. Considering all tests, the new form of shot appeared to contribute about one-third to the added severity of the test, and the new form of rattler about two-thirds. During the tests the old rattler was on a solid concrete foundation, the new one on a temporary foundation of timber skids.



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APRIL 11, 1912.

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### Report on New York's Paving

LAST week we printed an abstract of the conclusions and recommendations of a report made by the "Mayor's Committee" on the pavements of New York City which seems to us to deserve more than passing mention. In our opinion most of the recommendations are excellent. Unquestionably everything having to do with pavements should be controlled by one head. The highway bureau engineers certainly need "a competent corps of assistants," for responsible engineering heads now find their time so engrossed with clerical work that little remains for studying the engineering problems of paving. The desirability of traffic statistics has already been recognized by the inauguration of the systematic taking of such statistics in at least one of the boroughs. There is some difference of opinion among paving experts concerning the method of controlling pavement cuts and the advisability of operating municipal repair plants, but we believe the committee's recommendations should be tried more thoroughly than they have been in New York City. "All dead and un-

necessary tracks" unquestionably should "be removed from the streets." The demand for manholes of a design offering less interference with traffic is an urgent one, and is one of the matters which should be (but is not, we believe) within the control of the highway bureau, and the same is true of the use of pavements by contractors and merchants for private purposes.

These recommendations are good, but they have been made so often by the officials of the Paving Bureau as to sound time-worn. It is well that the taxpayers should have their attention called to these matters, and in endorsing these recommendations the committee has, we hope, assisted towards their adoption. Some of the conclusions appear to us to be open to considerable criticism, but most of all do we criticise the pervasion of the report with the idea that its findings were not already appreciated by the bureau officials and that present conditions are accepted by them in supine inertia. City officials in this country are tolerably well hardened to criticism of their acts, and when these criticisms are deserved we have little to say against them, although we think that in general a little more commendation where due and a little less criticism might produce better results and better officials. But when a committee which is composed entirely of mercantile and professional men with no special knowledge of the subject criticises, either directly or by implication, the officials of a department for not adopting practices and principles which they have for years been endeavoring to secure permission to adopt, and does not in any way give these officials credit for having previously seen these necessities, but rather takes to itself the entire credit for having discovered them; when it not only does this, but on the strength of newly-acquired and undigested information of a few weeks standing criticises technical conclusions based upon years of intimate study of the problem by trained engineers; when a committee with the dangerous "little knowledge" sets its opinions against those of the paving engineers of the entire country; then, it seems to us, it is time for someone to protest against the erroneous impression given to the general public. For this report takes to task not only the paving engineers of New York City, but criticises as "defective and antiquated" the specifications which resulted from careful consideration during two years by engineers and paving specialists of the entire country acting as committees of the Organization for Standardizing Paving Specifications. The report refers to the "very little knowledge among our engineers of the most approved modern methods of paving as carried on in places outside of the United States," although we believe the experience of most engineers who attended the International Paving Conferences of the past two years has been that United States engineers know more of European paving practice than do the Europeans of practice in this country. And we believe that these conferences also showed that modern traffic conditions have produced as many creditable improvements in paving methods in this country as abroad.

As a matter of fact, cities all over the world have been brought face to face with unusually severe traffic conditions during the past five or six years, and all have been making strenuous efforts to meet them. Probably no city in the world has encountered as difficult conditions as New York. In most of the larger cities there are a few lines of main traffic where it is possible to concentrate energy and expenditures and keep the streets in excellent condition, but in New York there are no avenues and very few cross streets which do not carry a traffic heavy in both wheel load and volume, and which continues in many of them more than 20 hours out of the 24. There are over 40 million square yards of paving in the city, fully half of which carries heavy traffic, and the bureaus have not been able to obtain sufficient appropriations or a large enough force of assistants to lay even makeshift pavements as fast as they are needed; and it would be a bold borough presi-

dent who would so brave criticism and even serious charges as to spend his appropriation in laying the most expensive pavements on a few streets only, while the other streets were totally abandoned to the fate of extreme deterioration. It is parallel to the case of a man who realizes that shoddy clothing is the least economical, but who can never acquire sufficient cash to get a fair start by purchasing an outfit of the more economical but much more expensive garments, without going barefoot or coatless for a time.

To even imply that this fundamental principle of economy in paving is not appreciated by the Bureau of Highways is hardly conceivable to those engineers who remember that George W. Tillson, until recently the engineer of the Manhattan highway bureau, and now consulting engineer for the Borough of Brooklyn, was the first to bring prominently before the profession the correct theory of pavement selection.

Let us consider some of the criticisms and recommendations of the report in detail, and the reasons for the conditions criticised. The concentration of power over the pavements in one head and the creation of a paving board have been recommended time and again by the paving engineers of the city, but the charter prepared for the city must be changed by the State Legislature to provide for this. The officials of the department will be only too glad to remove dead and unnecessary tracks from the streets when the franchises granted the street railway companies will permit. With the concentration of all authority over the pavements in one head it is probable that acceptable patterns of manhole heads would be insisted upon and that large sections of the pavement would no longer be confiscated by contractors and merchants. Recommendations have several times been made that the city own its own paving repair plant, and Brooklyn installed such a plant several years ago, although the committee was apparently unaware of this.

As to the ignorance of Americans concerning European practice, there are indications in the report that this accusation is based largely upon the fact that European methods have not been copied in this country. There certainly would seem to be little other foundation for it. In fact, this and the recommendation that "those methods which have given the best results in foreign cities be adopted for our use at once" give us the keynote for the whole report, as well as indicating the unreliability of the committee's conclusions in general. It is a common fault of the non-expert to conclude that a method which gives good results in one city is without question the best under all conditions. The member of this committee who was chiefly responsible for the report has for months past been urging the use in New York's main thoroughfares of small granite blocks, because they have given good results in Liverpool. It is questionable whether there is a quarry in this country yielding blocks similar in size and wearing quality to the Liverpool blocks. Engineers of a number of Atlantic coast cities have for two or three years past been endeavoring to locate such quarry and train up a set of stone cutters who can prepare such blocks. But even assuming we could obtain such stones in this country, are they what are needed on New York streets? If we are to take an example from England, as the committee recommends, why not from London, which approaches nearest to New York in size? And in London no stone block at all was laid last year, but the only pavements laid were wood block and asphalt—the two kinds of pavement which have been used most largely in New York City for some years past. The committee criticises New York's wood block pavements because they swell, apparently ignorant of the fact that this is so much more common in Paris that it is necessary in many cases to take up and relay a pavement after a few months of use.

We might continue at considerably greater length, but

will refer to only one point more. In one part of the report the committee recommends that in future contracts maintenance be limited to one year; ten pages further it recommends a limit of five years; and at the end of the report it formally recommends what it calls the German plan. This plan has been used in many cities where a long-time guarantee was required, and also practically the same plan after the guarantee had expired, but it has never proved successful in this country. These facts were apparently unknown to the committee.

Altogether the findings and conclusions of the committee are conspicuously those of a body of non-experts investigating a matter involving complicated conditions and scientific principles with which they were previously unfamiliar; and its recommendations are based upon the imperfect knowledge of the situation and the lack of ability to comprehend the facts governing it which would seem to be almost inevitable in such circumstances. In so far as its report deals with pavement conditions there is no reason why it should not be reliable. But the heads of the Paving Bureaus realize these conditions perhaps even better than the committee, and they also realize that if an appropriation of, say, \$25,000,000 were available they could put the pavements of the city on a satisfactory basis for economical maintenance. Unfortunately the committee does not seem to have considered the financial end of the question at all, and yet this is the very heart of the problem of New York's pavements and essentially involved in the carrying out of its recommendations, and the one which they, as business men rather than engineers, would seem best fitted to solve. Perhaps its very difficulty appalled them and explains why they confined themselves largely to the cheap recounting of well-known defects and a rehash of recommendations repeatedly made by the very officials whom they criticise.

#### LONDON PAVING REPORT

THERE is in the city of London, England, a metropolitan paving committee which was formed as the result of a conference of representatives of the Metropolitan Borough Councils in 1903. The purpose of this committee is to consider the general questions of materials and means for paving the streets of London. Its work is confined to the collection and assimilation of information relative to different materials and methods of paving under varied circumstances, and no attempt is made by the committee to advocate the use of any particular description of paving.

This committee has recently submitted its ninth annual report. From this report it appears that the principal kind of paving laid during the year in the main streets of the various boroughs making up the County of London was creosoted soft wood, generally laid close jointed and grouted with pitch. The only other pavement laid in the district known as "the City" was asphalt, the price for which was from \$3.16 to \$3.65 with, and from \$2.06 to \$2.19 without foundation, maintenance being included in all cases.

Concerning the foundation, some of the boroughs favor concrete 9 inches thick while others consider 6 inches sufficient, even in the main thoroughfares. There is apparently no idea of using a less thickness than 6 inches. It does not appear from the reports of any of the boroughs that motor traffic is particularly detrimental to wood-paved thoroughfares, provided a sufficiently thick foundation is used.

A great many miles of macadam streets are found in most of the boroughs, and one of the most striking features of the report for the last fiscal year is the saving in cost of maintenance and cleaning which has resulted from tar spraying the roads. This saving is not only in the amount of water which was formerly used for dust laying, but in the greater ease of keeping the streets clean and of general maintenance.

The greater part of the paving in the city consisted of



natural rock asphalt. On the main traffic streets this was laid to a depth of  $2\frac{1}{4}$  inches on a 9-inch concrete foundation, the cost being \$2.19 per square yard without the foundation, with 18 cts. per square yard as the annual cost of maintenance. The engineer stated that the asphalt paving which this replaced had lasted for  $17\frac{1}{4}$  years in one case and 20 years in another. On a street carrying less traffic 2 inches of asphalt was laid on an 8-inch concrete foundation at a cost of \$2.06 without foundation, and an annual cost for maintenance of 10 cts.

Cresosoted pine blocks 3 in. x 8 in. x 5 in. on an 8-inch foundation were laid with joints filled with a boiling mixture of pitch and oil, the cost of this being from \$1.86 to \$2.67 without foundation, with 13 to 18 cts. additional per year for maintenance. Some of this wood paving replaced hardwood paving.

In the city proper there are no macadam streets. The city engineer states that he finds the existing 6-inch foundations are not sufficient to withstand the great weight of modern motor vehicles, but believes that all future foundations should have a minimum thickness of 9 inches, the extra cost of the additional 3 inches being estimated by him to be 40 cts. per square yard.

It would appear from the above that no stone block was laid during the last fiscal year in any part of the County of London. In at least two boroughs where a great deal of heavy freight traffic is carried creosoted pine blocks were laid on a 9-inch concrete foundation, with joints filled with pitch in the lower part and cement grout in the upper. In the residential streets tar macadam was used very extensively. This was laid in two layers, the total thickness when finished being  $4\frac{1}{2}$  inches, and the surface was covered with fine granite screenings after rolling. Most of this was laid on old macadam foundation, and cost from 83 cts. to \$1 per square yard.

### BITUMINOUS COATED CONCRETE PAVEMENT

GEORGE street, between Main street and Geddes avenue in Paterson, N. J., a block which is situated more than a mile from the business center and, being a side street, has very little vehicular travel, was paved last September with a material new to that city. Neighboring streets of similar character are paved with macadam, but the situation of a public school on this block made a clean, dustless and noiseless pavement desirable; while the absence of heavy travel made it possible to secure a pavement with these characteristics at much less than the cost of sheet asphalt or wood block. The pavement selected consists of a bituminous wearing surface laid over an ordinary concrete base, the special construction being that known as the Dolarway pavement. The foundation was practically that which would be required for an asphalt pavement, but the bituminous wearing surface cost only 10 cents or a little more a square yard, while an asphalt pavement would probably cost \$2 per square yard including the base. The difference in interest costs of the two pavements, at 5 per cent., would pay for renewing one-half of the bituminous surface of the Dolarway pavement every year; while amortization charges and repairs on the more expensive pavement are items still further favoring the cheaper construction. The surface is such that it can be swept free of dust in dry weather and sprinkled if desired; while it cannot get muddy in wet weather if kept reasonably clean; it is impervious to water, and has the other characteristics of a high grade bituminous pavement except probably equal durability of surface.

This George street pavement, after six months' use and an unusually severe winter, when visited by the writer a few days ago, was found in excellent condition. At this time the temperature of the air was about 60 degrees Fahrenheit and the sun was shining. The pavement felt

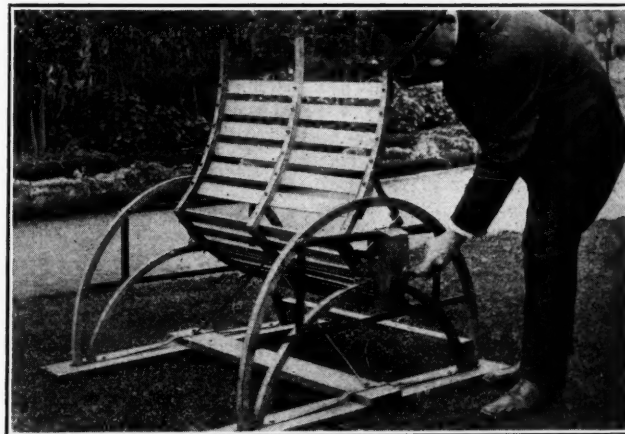
somewhat soft under foot but not uniformly so. This lack of uniformity was probably due to two causes; first, that the bitumen which was poured over the surface of the concrete varied in temper, probably from imperfect control of the heat in the melting kettle—that is, bitumen that had stood long in the kettle and was used toward the end of a day's work was harder than the freshly melted material. Second, that the grit which was rolled into the bitumen was spread irregularly, making those places having an excess of the grit harder than the rest.

Another defect, presumably of trifling moment, was noted. In a number of places measuring only a few inches in area bare concrete showed. These places seemed to be due to irregularities in the surface of the concrete, the bare spots being the high places. This was noticed about a manhole casting, where the concrete had been laid flush with the iron frame instead of being dug out or left a little low so that the top of the bitumen surface might be level with the iron. Joints between day's or half-day's work in placing the bituminous surface showed plainly in a ridge of thicker material crossing the roadway, but this seems unavoidable and unobjectionable except perhaps to one critical of appearances.

While experience with this pavement has been too brief to permit any very reliable conclusions to be drawn, it seems probable that this pavement serves admirably for a medium cost pavement under light traffic where the general characteristics of a bituminous pavement are desired but where the conditions do not warrant the expense of a sheet asphalt. There is the additional advantage that, if the concrete foundation is as well laid as it should be, the thin bituminous surface may at any time be replaced with sheet asphalt or other more permanent wearing surface.

### PARK BENCHES MAKE MONEY

A PARK bench has been devised by E. W. Allen, of San José, California, which is designed for use in connection with the free seats, and not to replace them. They are now being tried in operation in the parks of San José, where the idea has been favorably received. It is a swinging seat, so arranged that until a nickel is deposited in the slot beside it, the back is tilted forward and the seat downward,



NICKEL-IN-THE-SLOT PARK BENCHES.

so that it cannot be occupied. A coin releases it, however, when it swings back, providing a rocking seat for two persons. When vacated it swings back of itself to the former position and requires another five-cent piece to unlock it. The photograph shows the bench locked. The addition of a canopy is made for settees in sunny places. The inventor's theory is that the pay benches will be welcome for use on Sundays and other times when there are unusual crowds in the parks; also that many people will be willing to spend a nickel for a comfortable seat for their exclusive use.

## NEWS OF THE MUNICIPALITIES

**Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance**

### ROADS AND PAVEMENTS

#### To Construct Many Miles of Stone Roads

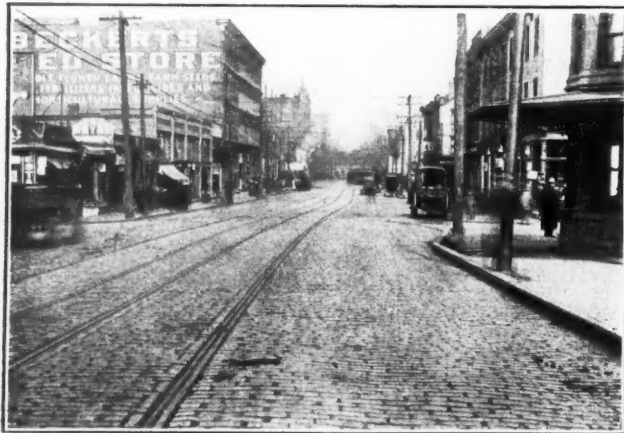
Saginaw, Mich.—With the beginning of county road work for 1912, Saginaw is to have the greatest activity in the construction of permanent stone roads since the adoption of the stone road law by the county. At the present time \$135,000 is available for this purpose. At the spring special election bonding propositions aggregating the sum of \$60,000 will be voted upon in several townships. Forty miles of stone roads are now laid out and designated for improvement. Although there are six complete road outfits it will be impossible to complete the entire work this year. Saginaw County now has 120 miles of good roads, distancing all counties of Michigan, and has more than any two combined.

#### One Million Dollars for Tarrant County Roads

Fort Worth, Tex.—One million dollars has been divided into four equal parts by the County Commissioners, and each Commissioner will get \$250,000 of the new bond issue, to be expended in his precinct for building new roads. Plans for expending the proceeds of the bond sale are developing rapidly, and it is stated that dirt and gravel will be flying in all parts of Tarrant County within a few weeks and there will be plenty of money in circulation this summer. Farmers and laborers of this locality will be given as much of the road-building work as possible, to keep the money at home. In addition to the \$1,000,000 to be spent for roads in the four precincts the sum of \$600,000 will be spent for building bridges in Precinct 1, which includes the city and suburbs. The three bridges provided for in the bond issue will span the Trinity within the city limits. One of these will be a viaduct connecting North Fort Worth with the city, which will cost \$35,000.

#### Put Streets in Condition

Perth Amboy, N. J.—Improvements and repairs to streets are being made in various parts of the city by the Street Department. Ideal weather conditions have set the department making annual spring improvements on unpaved streets, such as leveling and scraping them. Street Commissioner Adair has two scrapers at work on unpaved streets crossing Smith street, in the western part of the city. If favorable weather continues the streets in the northwestern and northern parts of the city will be improved in the same way. Acting Mayor Garretson and Street Commissioner Adair have made an examination of a serious cave-in on State street, almost opposite the easterly end of Hall avenue. A section of the brick pavement about five feet wide and about thirty feet long sank when the foundation under it gave way, thereby endangering traffic.



View of Federal Street, Pittsburgh, Pa., Showing Portion Raised 12 Feet to Prevent Flooding During High Water in River and Another Section as Yet Unimproved.

#### Many Alabama Roads Are Built in 1911

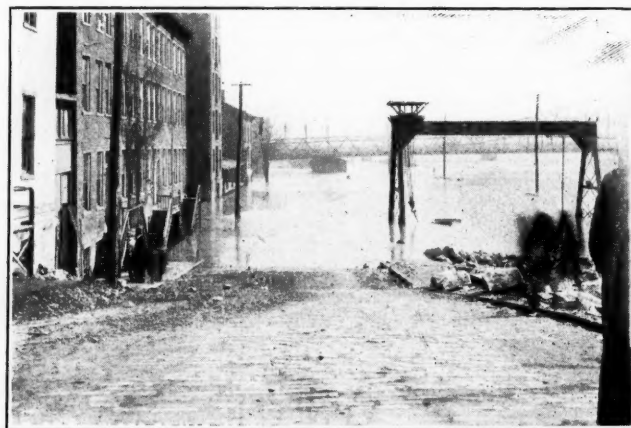
Montgomery, Ala.—During 1911, 1,005 miles of improved roads were built in Alabama and \$1,377,689.28 was spent for roads, bridges and culverts, according to statistics given out by State Highway Engineer Walter S. Kellar. Of the 1,005 miles of road, 18 were constructed of macadam, 49 of chert, 217 of gravel and 107 of sand clay, while 614 were graded. The total cost of the roads was \$1,106,152.80. Split log drags have been used successfully in eleven counties and \$50,000 was spent in this work.

#### Half Million for Streets

Brooklyn, N. Y.—The bill authorizing the city to repair streets paved with non-permanent pavements at the city's expense has passed the Legislature and Public Works Commissioner Lewis H. Pounds announced that it would result in the awarding of an additional half-million dollars worth of contracts for street repaving. Contracts amounting to more than a million dollars have already been let for the repair of forty miles of Brooklyn streets, and the half-million additional will be awarded by July 1 for the repaving with asphalt or other permanent pavement of twenty miles of streets throughout the borough now paved with cobblestones, granite and Belgium blocks and macadam. Commissioner Pounds prophesied that this year would be a banner year in the mileage of repaired streets. The record of previous years has never exceeded fifty-three or fifty-four miles, while by the end of next September Mr. Pounds expects to have completed sixty miles of repaving.

#### Advocate Use of Road Scrapers

Atlanta, Ga.—Several Council members who have had occasion to observe the bad condition of Atlanta streets resulting from the hard winter and heavy rainfalls, believe that if the Street Department would put all its road-scraping machines on dirty streets they could be smoothed up in thirty days well enough to last through the summer. Unpaved streets, and in many places cherted streets, have been literally cut to pieces by the combination of bad weather, rain and constant travel. Wherever sewers and water mains were recently laid the condition is particularly bad. The wheels have cut deep ruts, the continual freezing and thawing ruined the smooth surface, and the rains have torn great holes and gullies everywhere. Now that the weather is warm and there is a prospect of fair skies, the time has come to put the streets in condition, and the Street Department is working as hard as it can. The road scraping proposition will probably be introduced at the next meeting of the Street Committee. The idea is that by combining forces on this work, and if necessary buying a few more machines, the department, even with limited facilities, can within a short time restore smooth surfaces.





**Roads Bureau Experimenting With Beet Sugar Waste**

Washington, D. C.—The Bureau of Roads is making experiments with a very cheap grade of molasses, mixed with lime water, as a dust-laying cover for roads. Logan W. Page, director of the bureau, said that in the beet sugar country the cheap "black strap" molasses, now destroyed as of no value, might be used in this road work. The bureau is testing various kinds of surface and under-surface materials on stretches of suburban roads.

**To Complete Trunk Roads**

Detroit, Mich.—By May 1 the County Road Commissioners will start their summer's work of completing trunk roads of concrete from the Detroit city limits to the limits of Wayne County. A few days after that moving pictures will be taken of the men at work, the old roads and the new roads, by the Universal Portland Cement Co. These pictures of Wayne County good roads will be shown all over the United States. Edward N. Hines, County Road Commissioner, has received a telegram from the manager of the cement company asking his co-operation in getting the pictures. One of the amusing things about the moving pictures will be a film showing a carriage passing over one of the old mud roads, bumping over ruts and splashing through puddles, and the same carriage passing along one of the new concrete roads.

**State Encourages Paving of Roads Through Villages**

Newburgh, N. Y.—On the request of the people of the village of Highland the Board of Supervisors of Ulster County has endorsed and the State Highway Commission has approved a project to pave with brick the highway between the village and the river landing, where are located the Highland-Poughkeepsie ferryhouse and the West Shore station. The road runs through a ravine and is about a mile in length. It is on a grade the entire distance and there are at present elevations steeper than that in Newburgh's Broadway between Johnston and Dubois streets and a series of sharp curves. A trolley road runs through the same ravine, the road crossing and recrossing the tracks. The improvement of the road seems a difficult proposition, but the State authorities have not hesitated to take it up, and as a result Highland will soon be able to boast one of the finest highways from the river front to be found along the Hudson. The cost will be \$100,000, apportioned among the village and town, the county and the State. Macadam construction might do for the road, which is not very heavily traveled, but the people of Highland believe in permanent improvement. It is likely that Marlborough will endeavor to get its road from the river similarly improved. The State Highway Commission is encouraging the improvement of main roads through villages and some of the villages of this county, particularly Walden and Montgomery, will probably present their claims for consideration in this connection.

**Opinion Bars Road Building**

Bowling Green, O.—Attorney General Hogan informs the Auditor of Wyandot County that, in his opinion, the levy for stone roads, plus the levy for other township purposes, must not exceed 2 mills under the provisions of the Smith law. He regards it as immaterial that the total levy does not reach the 10 mill limit, since a clause of the Smith law expressly forbids the levying of more than 2 mills for township purposes. The Attorney General considers stone roads in that class. The result of this in Wood County will be far-reaching. The County Commissioners had fifteen roads the improvement of which they had expected to let this spring. In addition to this there were others which they would probably have contracted for during the summer. Five roads for which contracts were let last week are halted by this decision, and the bonds have been returned to the contractors. The county engineer will need only a small force this summer, instead of the big one which was anticipated. The reason is that, apparently, the majority of the townships cannot be levied upon for new stone roads without exceeding the 2 mills. Almost all of them did have this limit exceeded for the tax of 1911-12. There will be great disappointment among property owners, while the Auditor and Commissioner regret to have the hopes of the people go unrealized.

**Work of Paving Begins**

Denison, Tex.—The actual work of paving the 100 block of North Burnett avenue has commenced. The rock removed from the street is being unloaded near the city jail and will be used later in improving that structure. The dirt is being scattered over several streets which need filling. J. C. Feild, of the Feild Engineering Co., which is doing the work, stated that two carloads of Coffeyville paving blocks would soon arrive in Denison and the work would be pushed as rapidly as possible.

**Will Not Take Paving Contract**

Cedar Falls, Ia.—The McCarthy Improvement Co. of Davenport has refused to enter into a contract to do the concrete paving in compliance with the bid submitted to the City Council, on the ground that so much less paving is to be done with this material than was previously planned that it will not be profitable to do the work. It is understood that the Harribon people, who have the asphalt contract, will guarantee to put in the concrete at the price mentioned in the McCarthy bid.

**Uniform Walks Are Ordered**

San Antonio, Tex.—The City Council of San Antonio has enacted an ordinance conforming with charter provisions and authority granted by the State Legislature which will enable it to compel property owners to construct uniform concrete sidewalks and curbs according to specifications incorporated and made a part of the ordinance. Upon failure of a property owner to comply with the Council's order the city may construct the sidewalk and assess the cost against the property as taxes, the basis being one-fifth of the cost falling due every six months. In case of a homestead, which under the Texas law may escape special improvement taxes such as these, the Council may declare failure to construct the sidewalk a nuisance and assess a fine for each day's violation.

**West Michigan for Good Roads**

Traverse City, Mich.—"Better Roads for Western Michigan" seems to be the slogan this spring. Never in the history of the region has there been as great an interest in the subject of road improvement as is now to be found. There is so strong a demand for information regarding roads and road-building that the Western Michigan Development Bureau has prepared an illustrated lecture upon the subject. This lecture was given for the first time at Northport on March 27 to a large and enthusiastic audience. It is being elaborated and will be given at other points in the Western Michigan territory during the coming year. This spring the taxpayers of Kent County will vote upon a proposition of bonding themselves in the sum of \$600,000 for the purpose of at once building the main highways from the farm and orchard sections to the principal marketing points. The taxpayers of Ottawa County are considering a similar proposition. The taxpayers of Whitehall Village, Muskegon County, have already voted to bond for \$10,000 for road improvements. On the 1st of April a number of township bonding propositions will be passed upon. Leelanau Township, Leelanau County, will vote on \$30,000 bonds; Maple Valley, Montcalm County, \$10,000; Fruitland, Muskegon County, \$10,000; Golden, Oceana County, \$3,000.

**Macadam Road Caves In**

Schooley's Mountain, N. J.—Caves-in have occurred in the macadam road in two different places about one mile apart leading from this place to German Valley. The holes are three feet deep, and Freeholder William M. Coleman, of Washington Township, has been watching the danger spots to prevent serious accident. He has commenced filling in the depressions with stone, employing men and teams. This will only be a temporary repair, however.

**Recommends Cleaning Macadam Streets Before Applying Oil**

Norwich, Conn.—In the annual report of Health Officer Dr. N. B. Lewis, submitted to the court of common council, he says oil was used on all the principal streets during last summer instead of water, as was formerly the custom. This seems a very satisfactory and successful way of solving the dust problem during the summer months. A great improvement in the condition of the macadam streets would result if they were well cleaned before the oil was applied.

## SEWERAGE AND SANITATION

### Sewerage Bill Vetoed

Trenton, N. Y.—Governor Wilson has vetoed the Beard sewerage bill, which would have forbidden one municipality from building a sewage disposal plant within the territory of another without its consent. The bill, while of general application, was presumably intended to prevent the construction of a sewage disposal plant by the cities of Montclair, Orange and East Orange on some land which they had purchased within the town of Bloomfield. The combined towns proposed to build this plant rather than join the Passaic valley sewerage district, believing that the plan would be more economical. Governor Wilson stated that the sewerage question affected whole sections of the State and could not be dealt with community by community without regard to the topography of the country. To adopt the principle of the bill would be to embarrass engineering undertakings connected with the public health.

### Progress of Waterbury Sewerage Work

Waterbury, Conn.—The construction of the big sewer on South Leonard street has been started by Contractor John Keating. The pipe will be laid from a point near South Main street across the street and the bridge over the Naugatuck River, connecting with the main carrier pipe near the old ball grounds. The pipe will then go under the tracks of the Naugatuck and Highland divisions at the southern extremity of South Leonard street.

### Distribution of Coal Soot Shown by Chart

Indianapolis, Ind.—H. E. Barnard, chief chemist for the State Board of Health, has completed a chart showing the distribution of coal soot in the "mile square" in this city, bounded by North, East, South and West streets. The chart is based on laboratory experiments made from the collection of a twenty-four-hour deposit of soot at about 135 points in the square during the heavy snow in February. In making the collection a square foot of surface was marked off on the snow and the soot on the surface collected. The soot and snow were taken to the laboratory, the snow driven off by evaporation and the soot weighed. The computation was based on the number of pounds to the acre. It was found that the largest deposits were between Alabama and East streets and Georgia and Louisiana streets, where the effect of the railway locomotives is most felt. In these two squares the collection indicated a twenty-four-hour deposit of fifty-eight pounds to the acre. This may be illustrated by stating that it would equal the depositing of about 580 pounds on the Statehouse and grounds. Soot is a very light substance and 580 pounds would be a large amount, measured in bulk. In the immediate vicinity of the union station the deposits amounted to thirty pounds to the acre, and in the squares west of the station the amount varied from nine to fourteen pounds. Along almost the entire west side of the square the deposits varied from eight to fourteen pounds, while in the northwest part it was from six to ten pounds. Along the north border it averaged between three and four pounds, and was about the same for the northeast corner. Along the east border it ranged from six to eight pounds, and in the central part the range was from seven to ten pounds. Dr. J. N. Hurty, secretary of the board, said the examination was made both for sanitary and economical purposes. As the soot particles lie on the ground, he said, they pick up microbes from the dirt of the street and when tossed about by the wind become a menace to health. As the soot leaves the chimneys, he said, it does not contain any microbes and does not gather many as it descends.

### Paying Up for Sewer Work

Newark, N. J.—Checks have been received at the office of the Passaic Valley Sewerage Commissioners from three municipalities interested in the proposed trunk sewer. Two were to cover payment of the third instalment of the proportionate share of the cost and one was for the second instalment. North Arlington sent in a check for \$238.55 and East Rutherford one for \$645.70, representing their proportionate share of \$750,000, the total of the third instalment. Union Township paid its share of a \$500,000 instalment or \$1,111.26.

## WATER SUPPLY

### Big Water Main to Be Shut Off

Schenectady, N. Y.—There is some doubt as to when the repairs at the break in the 36-inch steel water main in Rotterdam will be completed. Superintendent of Water F. W. Bentley has uncovered the break, which he asserts was caused by the settling of the earth over the bit pipe. The "sleeve" is expected at once, but this cannot be adjusted until the manhole nearest the break can be located. In the event this is not nearby, the expense of excavating to reach it would exceed that of cutting a new hole in the pipe and adjusting a manhole cover, permitting access to the main. This is necessary, as workmen must crawl inside to cut the rivets at the seam in the pipe in order to put the sleeve on. Superintendent Bentley says the public will be given notice before the water in the 36-inch main is shut off. The city will still be provided, however, through the 24-inch main, but the quantity will be insufficient unless water-users take caution to prevent waste. The "sleeve" can be adjusted in five or six hours.

### Cleburne Plant Changes Hands

Cleburne, Tex.—The City Council has taken over the water works plant by paying the old bondholders \$128,000. Fifty thousand dollars will be spent in improving the plant and an engineer of Kansas City is on the ground now to start the work.

### Wooden Pipe Line Is Failure

Fort Worth, Tex.—The wooden pipe line connecting with the South Side water works plant is to be replaced at an early date by iron piping. The engineer is now preparing specifications and the pipe will be ordered as soon as he has finished his task. The wooden line was laid less than a year ago and proved a failure. It caused much indignation and many discussions among citizens of the Tenth Ward, who at one time threatened to exercise the recall feature of the city charter.

### Bad Break in a City Water Main

Jersey City, N. J.—One of the most disastrous water main breaks in years in Jersey City took place on St. Paul's avenue, twenty-five feet east of Tonnele avenue, when the big 36-inch outlet main of the Hudson City Reservoir gave way, flooding the whole section for two blocks, tearing away part of the roadways of St. Paul's, Germania and Tonnele avenues, flooding cellars and cutting off the entire Bergen and Greenville sections from water supply. The streets in the vicinity of the break were made impassable until a number of fire engines were detailed to pump out the sewers, after the water gates controlling the main from the Boulevard, west and south, were shut down. Employees of the Street and Water Board worked all night in an effort to repair the big main, which was not completed until the following night.

### Water Sold for Less Than Cost.

Macon, Ga.—The Macon water plant is selling over 27,000,000 gallons every month to the large manufacturing consumers at a rate that is lower than the actual average cost of production. Secretary Canford's report on the cost of production, made at the last meeting of the board, showed that it costs 7 cents per thousand gallons to filter and distribute the water. There are about 27,000,000 gallons sold every month to the thirty largest consumers at the rate of 6 cents per thousand gallons. The plant incurs an apparent loss on furnishing water to these consumers of about \$1,600 every month. This special rate of 6 cents per thousand gallons was granted by the old water company to special consumers, and as it was in effect when the city purchased the plant no change was made by the Commissioners, as it was thought to first ascertain the actual expenses and receipts of the plant. Now it has been established that even under this handicap—that of furnishing water at the special rates allowed by the old company—the plant pays an average monthly profit of \$2,500. This profit is used in the making of improvements and extensions, and it is Col. W. A. Huff's idea that it also be expended in the future for the purchase of meters, to be installed in every place where water is used.



**Board of Health Suspends Judgment on Use of Chlorine**

Cleveland, O.—City officials have expressed disappointment because the State Board of Health has declined to pass judgment on the effect of using chlorine in water. A report from the State board which reached council contains the assertion that while the opinion generally is given that chlorination of water does not produce a harmful effect on consumers the subject never has been given an exhaustive study. For that reason the board proposed to go into the matter thoroughly. The report was in response to a resolution adopted some months ago asking the State authorities to inform council whether in their opinion the use of chlorine in the city water is harmful and whether too much is being used. The State board says in its report that an excessive amount was used during the period of investigation, September 11 to February 6. On February 24, however, the amount was reduced by direction of City Water Expert Jackson. The State board told council that under normal conditions the city water supply is not dangerously contaminated by sewage, but occasionally is subject to that polluting influence. The report said that use of chlorine had destroyed the disease-producing organisms present in the supply and had caused a reduction in typhoid fever. "The report of the board indicates that the city water supply is good under normal conditions and there is no need for haste in studying the entire question," said Superintendent Schulz of the water department recently. "I am sorry the State officials express doubt as to the toxic effect of chlorine."

**Town Anticipates Fine Water System**

Tulsa, Okla.—"That well will furnish more water per day than any well in the State of Oklahoma." So said Byron H. Sands, superintendent of the Tulsa City Water Department, who was standing on the brink of a circular hole, which went down to a depth of 25 or 30 feet. In its center was a large pipe that ran still further down through the gravel, the greatest natural filter to be found anywhere. A hundred yards away is a similar well. When completely equipped with centrifugal pumps, etc., these two wells will furnish 2,000,000 gallons of water per day, or nearly as much as is being consumed by the entire city each twenty-four hours at the present time. The working out of this new system of water supply, which, by the way, is considered as worth millions of dollars to Tulsa, came as the result of a long series of experiments by Water Superintendent Sands, and his investigating trips to other cities in company with Commissioner J. H. Wheatley and other city officials. The new pump station will be the largest in the State and architecturally will be exceeded by none. It is being built entirely of pressed brick trimmed with Carthage stone. Steel windows are being placed on all sides of the building, so that it will be well lighted. The structure will be absolutely fireproof. When it is completed dirt will be filled in around it and flower beds will be set out. It is the plan of Mr. Sands to make the station one of the beauty spots of the city.

**Engineer Inspects Filtration Plant**

Niles, O.—Engineer Van Buskirk, of the State Board of Health, made a thorough inspection of the new filtration plant. Superintendent Holloway, of the water and light department, Engineer Brewer and Mayor Naylor accompanied the State board representative on his tour of inspection. A complete examination was made of the new plant, reservoir and water mains in all parts of the city, all of which met with his approval. Mr. Van Buskirk stated that the filtration plant was one of the most modern in every respect and that the people of the city might well feel proud of having such an improvement that would prove beneficial to the health of the city. Several samples of the water were taken by the engineer, and after reaching Columbus he will submit them to the regular analysis which will determine the purity. He stated that he would send a copy of his report, together with an analysis of the water, to Superintendent Holloway within the next two weeks. Upon the report submitted depends the acceptance of the new plant and all suggestions (if any) forwarded by the board will be immediately complied with by the city officials.

**Pumps Out of Commission**

East St. Louis, Ill.—The \$300,000 pumping station erected in connection with the big sewer was put out of commission when some of the calking in the outlet pipe from engine No. 3 sprung a leak. Before it could be stopped over five feet of water had run into the station, closing down all the engines. City Engineer Harper was notified and a call was made to St. Louis for a diver, who was able to find the leak and to temporarily fix it. Other pumps were put to work and the water has almost all been pumped out. Men were put to work calking the pipe, and the pumps will soon be in good working order, it is said.

**Break in Main Stops Water Supply**

Eastwood, N. Y.—The water supply of Eastwood was cut off for nearly a day by a break in the main of the Syracuse Suburban Water Company in the bed of Onondaga creek, near Onondaga lake. Relief from the water famine was obtained at 6 o'clock in the evening by running a single line of hose from a hydrant of the Syracuse water system to one of the Eastwood system at Burnet avenue. The connection was made by village firemen and employees of the water company. It was 10 o'clock before the mains were filled and residents could use the water. Richard B. Williams, Jr., superintendent of the water company, said the break had assumed more serious proportions than he first thought it would. The work of repair will be difficult and will probably take four or five days. "We have found," said Mr. Williams, "that the break is in the bed of Onondaga creek near the lake, and is under five feet of water. The creek is 80 or 100 feet wide at that point, and the break is 30 feet from the east bank. We will have to build a coffer dam about the break, pump this out and then put in a new section of pipe. It is going to be quite an undertaking. The pipe is 14 inches in diameter. There is no way of getting to the break with teams, and we will have to depend on the New York Central to move our supplies, as the break is close to the freight tracks. We had twelve men out all day looking for the exact location of the break, and it was nearly night before we found it."

**STREET LIGHTING AND POWER****New Meter Ordinance Passed**

Fort Worth, Tex.—An ordinance has been passed which will become effective after five days' publication, providing for a rereading and if the consumer is not then satisfied with a testing of gas meters, the one making application for the testing of a meter must deposit \$1 with the city if it is a water meter or with the company if it is a gas or light or power meter. If the complaint is well founded the party will get back the \$1. If a variation of as much as 2 per cent. is found the money is to be returned. If the complaint is ill founded the city or the company retains the deposit of \$1. Provision is made for the presence of the owner of the premises or the consumer or both at the test, if he or they so desire. It is said to be practically the same ordinance as is in force in Dallas.

**Town Installs Electric Lighting System**

Plankinton, S. D.—A new electric light system has been placed in operation here, and for the first time Plankinton is lighted by electricity. The plant is a first-class one and soon will furnish an all-day service as well as night.

**Power from Blast Furnace Gas**

Coatesville, Pa.—The production of electricity from what heretofore has gone up in smoke is the latest enterprising project that Coatesville is taking up, and in less than a year the town expects to own its plant, which will furnish current to light the streets, as well as for domestic illumination, besides making possible sufficient power to operate the machinery in the iron and steel mills. The borough is to shine brightly, and at the lowest cost. To produce electricity by burning coal is an expensive proposition. If the plan is carried out a local company, by agreement with the Worth Brothers Company, will collect gas that goes to waste from the blast furnaces, and from this electricity will be made. The Worth Brothers Company is catching a portion of the waste now and making current for its mills south of the borough, and the mills north of the town will soon be operated with such power.

### Town Owns Cheap Lighting System

Brandon, S. D.—Brandon has an electric plant costing about \$1,100. It has been in use about one year and cost the patrons \$20 per month to operate. A ten-room house with twenty incandescent lights costs \$2.50 per month to light, and well lighted. They use thirty storage batteries with ten reinforced batteries which gives light at any time required. The power is furnished by an eight-horsepower gas engine from one of the blacksmith shops. There are twelve patrons at present.

### New Lamps Have Been Installed

Altoona, Pa.—Employees of the Westinghouse Company have completed the work of installing the last of the metallic flame arc lamps for street lighting, under the provisions of the contract entered into between the municipality and the Penn Central Light & Power Co. two years ago. The work was finished on a circuit which embraced the Fifth ward, about 75 lamps being involved. When the contract for street lighting was given to the Penn Central Company for a period of 10 years, one of the stipulations was that the latest improved metallic flame lamps should be installed and a contract was made with the Westinghouse company to furnish them. It was not required that they should all be hung at once, so they were put up in sections, the work starting last September a year ago. With the completion of this work, Altoona can now truly boast of being the best lighted city in Pennsylvania, taking size into consideration. The installation of the new lamps was completed at a cost of \$35,000 to the Penn Central Co., and yet under the present contract the city pays 50 cents per lamp less than it did before when there was competition. The city is also the gainer in the fact that the new lamps give 40 per cent. more illumination than the old arc lamps. The lighting has been entirely satisfactory. This action was taken after a careful investigation of the merits of the new lamp was made by a committee of councilmen, who were taken by the Westinghouse people to visit several cities in the Eastern part of the State, where they had been installed.

### Engineer Reports on New Source of Power

Los Angeles, Cal.—A new source of electric power in connection with the aqueduct project not included in the 120,000-horsepower originally contemplated, and sufficient in amount to light a large part of the western residence district including Hollywood, has just been "discovered" by William Mulholland, chief engineer of the aqueduct. The announcement of the location of a new power site in the Cahuenga Mountains less than four miles from Hollywood was made in the comprehensive report and plan for the distribution of Owens River water filed with the Public Service Commission by the chief engineer and adopted by the board. The plans for water distribution provide for the building of a great pipe line directly across the San Fernando Valley in a north and south direction. One end of the line will be located high up on the northern slope of the valley just below the great San Fernando reservoir into which the water from the aqueduct will flow. The elevation of the north end of the line is more than 1,100 feet above sea level. The other end of the line will rise nearly to the summit of the Cahuenga Mountains, which enclose the San Fernando valley on the south side. The water will pass through the mountains in a tunnel 850 feet above sea level. After passing through the tunnel in the Cahuenga Mountains the water will flow into a reservoir high up in Franklin canyon, which is about four miles west of Hollywood and on this side of the range. This reservoir will have a capacity of 42,000,000 gallons. Farther down the canyon, at a point having an elevation of 350 feet lower, will be a second reservoir with a capacity of 356,000,000 gallons. With the amount of water which will flow through the great pipe across the valley and a drop of 350 feet, it will be possible to generate an average steady production of 3,200 horse-power of electrical energy. By regulating the flow of the upper reservoir it will be possible to meet a maximum demand for a short time at certain hours of the day—a peak load—of 7,000 horse-power. Electrical engineers estimate that 3,200 horse-power of electrical energy generated so close to the city as this will be is worth commercially \$500 per horse-power.

## FIRE AND POLICE

### Free Rides for Chiefs of Police

Trenton, N. J.—Governor Wilson has signed Assemblyman Grove's bill to make the railroad companies issue free transportation to chiefs of police in New Jersey. Chief Monohan, of Jersey City, did much to push this bill through both houses.

### Chester Improves Fire Alarm System

Chester, Pa.—The work of installing the new master transmission instrument for the repeating station of the Gamewell Fire Alarm System to be established in the hearing room of the City Hall will be commenced, and it is expected that the station will soon be in operation. The apparatus will be installed by William Kurfis, an electrician employed at the Eddystone Print Works, who will hereafter repair any defects which may occur in the workings of the electrical alarm system. The master box will greatly facilitate the sending in of alarms of fire which come over the telephone. Under the present system alarms sent in by telephone conflict with the alarms sounded by means of the Gamewell boxes, the ringing of the fire house bells and the blowing of the Beacon Light Co.'s whistle by the old district signals almost simultaneously with the signal alarms of the Gamewell system creating a general confusion. With the operation of the master transmission box this difficulty will be overcome, as the desk sergeants at the City Hall will be able to transfer the alarm sent in over the telephone to the Gamewell system.

### Report of Fire Commissioner for 1911

New York, N. Y.—Joseph Johnson, Fire Commissioner, has made public his report to Mayor Gaynor for 1911. The report shows that there were fire losses in the city for that year aggregating \$12,470,806, an average loss of \$855.69 a fire, as compared with a total of \$8,591,831, or an average of \$596.45 a fire in 1910. Fourteen fires alone, which occurred in the first six months of 1911, caused a loss of \$3,758,065. In the entire city during the whole year there were 13,868 fires, as compared with 14,405 fires for the year before. The important achievement of the year in the Fire Department was the reduction in the last six months of 1911 in the number of fires at the rate of 2,452 a year," Mr. Johnson states in his report. "The number of fires in the first six months of 1911 was at the rate of 43 a day, and the number in the last six months, up to December 20, was 36 a day, a reduction during the last six months of 7 fires a day. This is the first sudden and substantial reduction in the rate of fires in the history of the greater city. This reduction was brought about, in part, by a special and thorough investigation of hazardous premises in the city, resulting in the placing of 5,000 violations upon the worst of the buildings. At the same time the uniformed force was greatly heartened in its work by the Mayor's executive order that appointments must be made in numerical order from the eligible list." Another important improvement in the fire service given the city, Mr. Johnson says, is the motorization of the Fire Department, which is well under way. There are now in the department, he says, 43 motor vehicles, including one motor-driven steam pumping engine, one gasoline motor and pumping engine, one motor-propelled water tower and eight high-pressure hose wagons. The other motor vehicles are touring cars for executive officers, runabouts for deputy chiefs, delivery trucks, etc. Before December 31, 1912, it is probable that 150 pieces of motor apparatus will be in service. There are under contract, due for delivery during the first three months of 1912, two gasoline-propelled pumping engines, one combination hose wagon and engine, motor propelled; three high-pressure hose wagons, four automobile hook and ladder trucks, two gas-electric tractors for water towers and two three-ton delivery trucks. An innovation for economy was made in the shoeing of the horses of the department, by which a saving of about \$25,000 was brought about. During 1911 the old system of shoeing fire horses by contract was abolished, and ten horseshoeing wagons, owned and operated by the department itself, were placed in service. During most of the year the Department shod its horses with its own men.



### AUTO APPARATUS NOTES

#### Charleston Chief Inspects Birmingham Motor Apparatus and Is Impressed with Usefulness of Tractors— Triple Combination Apparatus at Matteawan— Chemical Tank Important Adjunct to Chief's Car

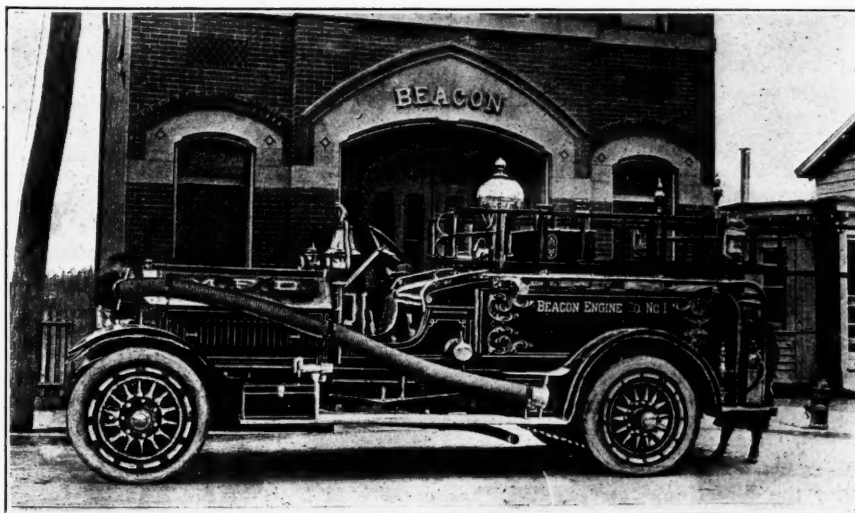
Muskogee, Okla.—The fire department, which has recently received its second Webb combination chemical and hose motor car, has, for the instruction of the members, been giving this new car a thorough trying out under every condition that would possibly come about in the fire service of that city. With surprising ease and speed this car dragged a 9,000-pound steam fire engine up long 6 per cent. grades. This method of locomotion will mean a further saving to the city of considerable expense in horseflesh.

Winooski, Vt.—A chemical engine and hook and ladder truck have been added to the local fire department's equipment. The chemical has two 50-gallon tanks, 200 feet of chemical hose, harness and other equipment. The engine and hook and ladder truck were purchased from the city of Burlington and are in first class condition. The price paid for both chemical and hook and ladder was \$600, which is \$2,200 less than the city of Burlington paid for the chemical alone about 17 years ago.

Elizabeth, N. J.—Returning to fire headquarters after an hour's spin about the city in the new automobile fire engine made at the La France Works, Chief Gertsung, who was driving the car through the city, answered the first bell alarm with the machine, when taps were sounded from box 38. The chief is much pleased with the motor fire engine. It has power to spare, runs easily and rides as well. The car is being kept at headquarters and will remain housed until after the official test or until it is accepted by the city. Then it will be placed in service as Engine 2, which will be placed in reserve until the completion of the Prince street house, which will take about six weeks, when the automobile apparatus will be transferred to its regular station as Engine 7.

Vernon, Tex.—The City Council has purchased from a Dallas representative of an auto fire engine company a 70-horsepower combination chemical and hose auto fire truck. The price paid was \$5,500. It is so constructed that a pumping attachment can be added if desired.

Matteawan, N. Y.—The picture illustrates the handsome new Webb Fire Engine purchased for Beacon Engine Co. of Matteawan. It is a six-cylinder 80-horsepower affair and is the first of two of its kind ever built. The other is now in use by the Milwaukee Fire Department. It is painted dark red, equipped with pump with capacity of 500 gallons a minute, holds 1,000 feet of hose and can carry eight men. It is also equipped with chemical tank, extension ladder and complete set of tools. The combined weight of machine and equipment is five tons. Cost approximately \$8,000.



Courtesy Newburgh News.

BEACON ENGINE COMPANY'S NEW APPARATUS.

Muncie, Ind.—Fire Chief John Casey and the members of the Board of Safety and the Fire Committee of the Council have been to Indianapolis to inspect the Indianapolis Automobile Show and also to look at the various machines on display with the view of purchasing a motor wagon for Chief Casey. The City Council at its recent meeting appropriated the sum of \$1,800 for the purchase of an auto wagon for the chief. The members of the Safety Board and the fire chief have inspected the machines at the Inter-State factory put out by a local company. Although the board has not yet signed any contract, it is very probable that an Inter-State car will be purchased. The car will be equipped with two chemical tanks, and with the use of these Chief Casey will be able to extinguish small blazes before the hose wagons arrive upon the scene. It is very likely that the board will make its purchase within the next few days.

Charleston, S. C.—Chief Behrens and Firemaster Williams, of the Fire Department, have returned from a trip to Birmingham, where the representatives of the local department went to see a practical demonstration of a motor gasoline tractor, similar to the piece of apparatus which the Charleston board has contemplated installing. The two officials were given a demonstration of the powerful tractor and were much impressed with its efficiency and practicability. Chief Bennett, of the Birmingham department, did all in his power to make the visit of the Charleston officials a success, and recommended the machines in question enthusiastically, the department in that city having installed several of the same type recently. Chief Bennett ordered out one of the tractors, and gave the Charleston firemen a most convincing demonstration. The motor is a powerful six-cylinder gasoline engine, capable of pulling an ordinary steam engine attached at a rate of thirty miles an hour. Chief Behrens was enthusiastic on the subject of the tractor, and said that in a very few years the new machine will have paid for its cost in the reduced running expenses of the department, and it will undoubtedly greatly increase the efficiency of the Charleston department.

Sharon, Pa.—Either a fire engine or an auto truck with pumps is declared to be a decided necessity in Sharon at the present time by Chief Fred Vanderholt, of the Fire Department. The chief has been recommending the purchase of an auto fire truck with pumps for the past few years, but was unable to get this recommendation through Council on account of lack of funds in the city treasury. Recently, however, the recommendation had been more closely looked into by Councilmen and it was predicted that something would be done in the near future. The statement was made by Mr. Vanderholt when his opinion was sought as to whether the water mains in the business and residence districts of the city are of sufficient size. He declared that there is no doubt but that there would be sufficient water to fight fires even on the hills, provided pumps are secured to increase the pressure to the necessary point. The pressure at the nozzles of the two lines, with a small nozzle attached, was less than 75 pounds at a recent test. With the larger nozzle it was still less. The pressure should be 200 pounds or better, it is asserted, and the chief is satisfied that the pressure could be brought up to more than this figure by the attaching of pumps to the water supply. He believes the volume of water sufficient. At an exhibition at Youngstown recently, Chief Vanderholt and Councilmen saw the auto fire truck with pumps increase the water pressure from 35 pounds to 200 pounds. Chief Vanderholt also declares that the argument heard that a heavy fire truck would find it impossible to get through the muddy streets of the city in winter is wrong. He declares a truck for Sharon would be of between 90 or 100 horsepower and would be capable of traversing any street in the city at a faster rate than is recorded by the three-horse-hitch at the present time.

## GOVERNMENT AND FINANCE

### St. Joseph Votes Commission

St. Joseph, Mich.—St. Joseph has voted for the commission form of government, a proposition to revise the city's charter so as to secure home rule being carried by 58 majority.

### Jasonville Will Be Incorporated

Jasonville, Ind.—Jasonville has been voted a city by a majority of twenty-seven votes. The east precinct returned a majority of eighteen votes against incorporation and the west precinct forty-five in favor of the city. The election of city officers will follow next month.

### Milwaukee Rejects Rule by Socialists

Milwaukee, Wis.—Milwaukee is no longer a Socialist city. After a campaign in which the issue was said to be Americanism, the Stars and Stripes as against Socialism, the voters of Milwaukee, by a vote never before equalled in this city, demanded that the Socialistic banner be hauled down from the City Hall flagstaff, where it has fluttered metaphorically for the last two years, and a fusion ticket, headed by one Republican and two Democrats, with practically a non-partisan City Council, has been elected to take over the reins of government.

### Home Telephone Co. Pays City

Quincy, Ill.—The Home Telephone Co. has handed to the City Clerk its check for \$1,121.63, being the amount which the company finds is due the city of Quincy as 2 per cent. of the company's gross earnings for the past fiscal year. The amount paid last year by the company was \$1,041. The amount paid this year shows an increase and speaks well for a company that was about to sell out because of poor patronage.

### Walla Walla Saving Money

Walla Walla, Wash.—Figures compiled by the city commissioners show that they have reduced the debt of the city of Walla Walla from \$100,000 since they have been in office. More than \$23,000 has been cut from the current expenses since October, compared with the same five months in 1910-11.

### New Baltimore Charter Passes

Annapolis, Md.—Baltimore's proposed city charter has passed the Legislature. If approved by the Governor and ratified by the voters of Baltimore it will become effective in 1915. The new plan replaces the present two-branch City Council with a single body of twenty-six members, with greatly curtailed powers, most of the former powers of the Council being lodged with the Board of Estimates and Awards, consisting of the Mayor, Comptroller, President and Vice-President of the Council and the City Solicitor.

## STREET CLEANING AND REFUSE DISPOSAL

### Clean-up Day Appointed

North Vernon, Ind.—The Woman's Civic League of this city has decided on April 18 as "clean-up day," and Mayor Stemm will issue a proclamation. The women have divided the city into districts and they will distribute literature and flower seeds to every resident.

### Clean City by Wards

Toledo, O.—Instead of single clean-up day the Civic Federation have decided to clean the city by wards, devoting a day to each ward in the city. The start was made April 1, when the first ward received the attention of the cleaners, and the campaign will continue until the fifteen wards are free from rubbish. Edward P. Hubbell and a number of assistants will have charge.

### Ocean City Brightened

Ocean City, N. J.—All the streets, alleys and yards of this city look as bright and clean "as a new pin" now, the people making a concerted response to Mayor Headley's proclamation designating "Clean-up Day." Early in the morning the city's street laborers were at work giving extra attention to the lots and alleys, under the direction of the officials. The school children, who were given a half-holiday, did effective work.

### Trash Cans Installed

Port Arthur, Tex.—Galvanized trash cans have been installed on the business streets. These are stationary affairs and are fixed to convenient posts by iron straps. The cans are emptied by means of a sliding door on the side next the street. The installation is a result of the clean-up movement, which is already giving the alleyways and rears of lots a different appearance.

### Trolley Car Sprinkling Carts Tested by City

East St. Louis, Mo.—A few weeks ago the City Council entered into an agreement by which the East St. Louis and Suburban Railway was to sprinkle the streets in exchange for the Council's relieving the railway of putting its trolley wires under ground. The East St. Louis and Suburban purchased two electric sprinklers, and on their arrival they were given a test. Congressman W. A. Roderberg, Senator John M. Chamberlain and Postmaster J. B. Messick were among those who toured the city on the cars. The new sprinklers hold 400 gallons of water and sprinkle one and a half miles of street at a trip.

### Town Observes Clean-up Day

Puyallup, Wash.—The city has just had its annual clean-up. Business houses closed at noon and the schools were dismissed at 2 o'clock, devoting the afternoon to cleaning up the school grounds, streets, yards and vacant lots. At Central School the larger pupils formed brigades, each brigade working in a certain district to pick up scraps of paper that have been scattered by pupils on their way to and from school. Twenty-five eighth grade boys volunteered to go about town and scrub off from fences, buildings and sidewalks marks that have been thoughtlessly made by pupils.

### Will Cart Rubbish to Incinerating Plant

Rochester, N. Y.—It is expected that by May 1 collections of refuse and rubbish from all sections of the city will be made by wagons from the city's incinerating plant in Falls street. Collections are now being made from only three districts, all of which are in the downtown section, and shipments of paper are being made almost daily. Commissioner of Public Works Pierce said that the city will be divided into nine districts, and he expects that the greatest amount of rubbish will be collected in the outlying districts. The material now being gathered consists chiefly of paper, rags, bottles and cans, all of which pass through a process of separation at the incinerating plant. It is expected that some of the new wagons ordered by the Board of Contract and Supply from the firm of W. H. Rowerdink & Sons will be ready for delivery by the middle of next month, and as fast as these wagons are received they will be sent into the various districts and the work of separating the paper, rags, cans, bottles, etc., at the incinerating plant will necessarily be increased, and it is expected that a fair-sized revenue will be realized from the collections.

### \$13,800 to Keep Streets Clean

Syracuse, N. Y.—During the last three months the city has paid out \$13,841.56 for cleaning snow from the streets, or \$2,739.84 more than in the same three months last year. From January 1 to the last week in March last year the work cost \$11,101.92. The Department of Public Works has been over the streets four times since the first thaw this year, but the streets are now in such condition that much of the work will have to be done over again. Usually one cleaning suffices, after which the "white wings" are put at work. Commissioner Frank M. Westcott put his men at work early this year. During the first thaw tons of ice and snow were taken from the streets. Cold waves and thaws succeeded one another, each storm undoing the street cleaning work of the department. Commissioner Westcott said conditions are nearly as bad now as they were before the work was started. "A year ago now we had the 'white wings' at work," said Commissioner Westcott, "and the streets were dry and clean. On April 10 the entire force of 'white wings' was put on. The Sunday before the automobile show last year we flushed Clinton street. Weather conditions have been all against us this year. The work on the pavements so far this year has cost more than it ever did before."



**Time Needed to Clean City**

Baltimore, Md.—So widespread has been the response to the plea of the Civic League in their clean city crusade that housekeepers should keep themselves in readiness for carts of the Street Cleaning Department, and so much rubbish has been gathered by almost every household that, instead of carting it all away, the men have had to resort to other expedients. The junk dealers have helped materially to keep the work within bounds. They are allowed to gather from heaps on the curbstones any glass and metal which they may contain, and in this way the amount of rubbish is reduced materially. Many streets were dotted with small fires, which consumed the bulk of the paper and old wooden furniture that was contained in the debris.

**RAPID TRANSIT****City Experiments with New Stepless Car**

New York, N. Y.—The street railway company is operating one of the stepless type of trolley cars on the Broadway line from 59th street to South Ferry as an experiment. The new car will be thoroughly tested in service and if it proves satisfactory and meets with public approval cars of that type will be put on the company's lines. The new "stepless" boasts many improvements and novelties. The body of the car is four inches from the pavement and the floor is six inches higher, making the step ten inches in all, considerably less than that on the old cars. When the car doors are opened by the conductor the power is shut off and the car cannot be started until the door is closed again. The car is heated and ventilated by automatic devices and the floor is of cement.

**Railway Must Grant Concessions or Lose Franchise**

Canton, O.—Unless the Northern Ohio Traction Co. establishes a ten-cent fare one way between Canton and Massillon, and a five-cent fare one way from Reedurban and intermediate points to each of the two cities, together with transfers to any line in either city by April 27, the County Commissioners will terminate the company's right to occupy the Canton-Massillon highway. This ultimatum, which gives the company thirty days in which to reduce its fares and provide transfers, was issued by the Commissioners in the adoption of a resolution presented by Commissioner Brissel. Commissioners McDonald and Stoner concurred, so that it was unanimously adopted. Prosecutor Krichbaum is instructed by the resolution to take such legal proceedings as may be necessary to have the grant made null and void and the electric railway removed from the highway in case of a non-compliance.

**MISCELLANEOUS****Bans Street Musicians**

Fond du Lac, Wis.—The Fond du Lac common council has passed an ordinance putting a ban on street musicians, including itinerant bands, organ grinders and fiddlers; also on all movable signs, none of which is to be permitted on Main street in the future. This is a part of the organized movement for a better and more beautiful Main street begun a year ago, when all wooden poles were ordered removed, after which a mile of ornamental lights surmounting colonial pillars was reinstalled.

**Street Accidents Increase**

New York, N. Y.—The report of the National Highways Protective Society of accidents due to vehicular traffic on the streets of the city of New York for the three months ending March 31 shows that 91 persons were killed and 506 injured. Thirty-one of those killed were children under 16 years of age. The record for the corresponding months of 1911 shows that 51 persons were killed and 307 injured. During the months of January, February and March, 1912, automobiles caused the death of 39 persons, as against 19 during the corresponding months of 1911. Trolley cars caused the death of 31 persons, as compared with 16 a year ago. Wagons killed 21, as against 19 in January, February and March, 1911. During the month of March, 1912, automobiles killed 17 persons and injured 99; trolley cars killed 3 and injured 46; wagons caused the death of 8 and injured 34.

**Lubricating Oils May Be Tested Hereafter**

Los Angeles, Cal.—In a report by Charles A. Blackmar, oil inspector, the council is asked to provide arrangements by which lubricating oils used by the city may be tested. It is declared that more than \$10,000 in oils of this kind are used by the city in a year. The council approved the report and referred it to the budget committee.

**Gives City Playgrounds**

Akron, O.—After ineffectual efforts by the Playground Association to get the city council to purchase 20 acres of land for playgrounds, F. H. Mason, vice-president of the Goodrich Rubber Co., came to the rescue and bought the land at \$700 an acre. He donated the property to the city, and in addition agreed to give \$3,000 a year for three years toward its maintenance. This was done on condition that the city immediately improve the property so it could be used this summer. The offer was accepted.

**A Municipal Bulletin**

Cincinnati, O.—A resolution submitted by Mr. Heilker has been adopted authorizing the president of council to appoint a committee to investigate the desirability of publishing a "Municipal Bulletin," to appear weekly, semi-monthly or monthly, and to contain lists of members, committees and officers of councils, business rules of council, the names of city officials and information of interest to the general public. It is the intention to distribute the Bulletin free of charge among the taxpayers. President Johnson named as members of the committee Messrs. Heilker, Berning and Le Blond.

**Flower Seed for School Children**

Nashville, Tenn.—As a step in carrying forward the work the City Beautiful Association has purchased from a local wholesale seed firm quite a supply of zinnia seed, the flower adopted by the association, and is having this seed put into small packages preparatory to giving one package to every pupil in the public schools. The package will be accompanied by a card to be signed by the pupil acknowledging its receipt and binding him to plant the seed and properly care for the plants. Application will be made by Supt. J. J. Keyes to be allowed to distribute these in some way deemed suitable by him. Members of the association believe that if they can succeed in enlisting the interest of such a large body of children that a very decided step will have been taken to advance the purpose of the movement, which is to give the city a more beautiful aspect and so help to make the home more attractive.

**Municipal 'Phones for San Francisco**

San Francisco, Cal.—Municipal ownership of a telephone system was approved by a two to one vote in San Francisco, 30,000 voters going to the polls to express their opinion as to whether the board of supervisors should try to nullify the recent merger of the Pacific and Home Telephone systems, and whether an election for the authorization of a \$6,000,000 issue of bonds for the acquirement of the Home system should be called. The election was held under the initiative law invoked by the local Electrical Workers' Union.

**Must Observe Street Lines**

Dallas, Tex.—That a determined effort will be made to force property owners to observe their own property lines and keep houses and buildings off the city's property in alleys and streets is the declaration made by City Engineer J. M. Preston. Mr. Preston said a great many people have no regard for street lines and others put their buildings on the streets and alleys through ignorance. He said: "There are many houses in Oak Cliff and in this part of the city which are partly or entirely placed in streets or alleys that belong to the city. There is one crew here in this office that has had time recently for little else than settling property lines and making surveys of streets and alleys where people have encroached on them. We have just finished opening Bank avenue, and we actually found a stretch of nearly 2,000 feet where practically all of the houses were anywhere from 11 to 4 feet outside the property lines and into the street. Wherever we find houses out of line we make a complete survey and then notify the owners to move back. It is absolutely ruinous to allow the streets to be congested in this way and owners must obey when they are told to move back or they will be prosecuted."

## LEGAL NEWS

### A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

#### Pure Food Laws—Municipal Authority

*City of Chicago v. Union Ice Cream Mfg. Co.*—The pure food act in force July 1, 1907, does not deprive municipal authorities of all power to legislate on the subject authorized by the City and Village Act 1872, as amended and re-enacted by Laws Adj. Sess. 1907-08, and a city may regulate and control by ordinances, not in conflict with the pure food law, the sale of foods, and may adopt an ordinance punishing the sale of adulterated food, though the ordinance attaches a less penalty for its violation than is imposed by the pure food act.—Supreme Court of Illinois, 96 N. E. R., 872.

#### Excavation—Personal Injury—Negligence

*City and County of Denver v. Monroe.*—Where, in an action against a city for injuries by falling into a sewer excavation at a place where the boardwalk had been removed, the evidence was conflicting whether the danger was indicated by red lights properly placed, the denial of a motion for a directed verdict was proper, it being proper for the court to direct a verdict only when the facts are undisputed and but one inference can be drawn from them. One walking on a city sidewalk at night and coming to a sewer excavation of which she had knowledge was bound to exercise only reasonable and ordinary care, in the light of the knowledge she then had, to determine whether it was safe for her to attempt to cross.—Court of Appeals of Colorado, 121 P. R., 684.

#### Personal Injury—Notice—Sufficiency

*Lindquist et ux. v. City of Seattle.*—A notice of injury given under Seattle City Charter, requiring all claims for damages to accurately locate and describe the defect causing the injury and to accurately describe the injury, if in good faith, is sufficient where it states that claimant's leg was "fractured and bruised to such an extent that he was compelled to undergo a surgical operation" and admits evidence that his leg was bruised from the knee to the foot, and that his ankle was sprained and the ligaments thereof ruptured so as to necessitate a surgical operation.—Supreme Court of Washington, 121 P. R., 449.

#### Engineer's Estimate of Cost-Sufficiency

*City of Chicago v. Davis et al.*—In the absence of fraud or mistake of the engineer of the Board of Local Improvements in estimating the cost of an improvement, property owners may not interpose as a defense to a confirmation of an assessment for the work that the estimate was excessive, since, after the work is completed according to the ordinance providing therefor the property owners will not be compelled to pay more than the actual cost.—Supreme Court of Illinois, 97 N. E. R., 700.

#### Sub-contractor's Claim Against City

*Tower v. Miller et al.*—Under St. 1909, providing that officers or agents contracting for cities, etc., for public works shall obtain security for payment by the contractor for labor and materials, but that to obtain benefit of such security a claimant must file with "such officers or agents" a statement, etc., a statement of an amount due claimant sub-contractor under a contract for the construction of a city schoolhouse was improperly addressed to the city, it being received and filed by the city treasurer, where the general contract for the building was made through the mayor and the committee on city property.—Supreme Judicial Court of Massachusetts, 97 N. E. R., 748.

#### Public Improvement—Assessments—Defenses

*City of Louisville v. Benedict et al.*—That the owner of lots, with other owners, signed a petition for the improvement of a street, the petition containing a waiver of any claim for damages to the property, does not bar the owner, in a contractor's action for the enforcement of warrants issued for such improvement, from interposing the defense that the assessment was invalid for being greater than the value of the property after the improvement.—Court of Appeals of Kentucky, 144 S. W. R., 43.

#### Defective Streets—Contributory Negligence

*Border v. City of Sedalia.*—A pedestrian was guilty of contributory negligence barring recovery for injury caused by falling into a hole in a street crossing at night, where he knew of the hole and it was so wide that he had been previously compelled to jump over it, and yet on the particular occasion walked at an ordinary gait toward the hole in extreme darkness.—Kansas City Court of Appeals, Missouri, 144 S. W. R., 161.

#### Specifications—Lake Asphalt—Construction

*City of Park Ridge v. Wisner.*—An ordinance for street paving required the binder to be made of lake asphalt or some other equally good bituminous asphalt binder. A witness testified that lake asphalt, unless fluxed, would not make a proper binder for a top course, and that he would construe the ordinance as requiring pure asphalt, though all his evidence indicated that he thought that the reasonable presumption from reading the whole ordinance was that the term "lake asphalt binder" meant lake asphalt so treated that it could be used for a top dressing binder. Held, that the ordinance would be so construed under the rule that where two constructions of an ordinance are possible, one of which will render it invalid, and the other sustain it, the court will adopt the latter.—Supreme Court of Illinois, 97 N. E. R., 677.

#### Regulating Telephone Rates—Injunction

*Pacific Telephone & Telegraph Co. v. City of Los Angeles.*—Where, in a suit to restrain the enforcement of telephone rates prescribed by a city ordinance, it appeared that there was a substantial controversy between the parties, which could not be determined satisfactorily until after final hearing on the merits, and that the granting of a temporary injunction on bond would work less inconvenience and injury to the parties, such injunction would be allowed, on the further provision that rates collected in excess of those prescribed by the ordinance should be impounded, subject to future disposition by the court.—United States Circuit Court, 192 F. R., 1009.

#### Personal Injuries—Excessive Damages

*Asbury v. Kansas City.*—An "alley" is a narrow street, and a city which has accepted an alley is bound to keep it in reasonably safe condition for travel. A verdict of \$7,500 where plaintiff's leg was broken in two places, one place within three inches of the hip and one just below the knee, that he was confined to the hospital nearly three months, and at his home in bed for six months, that he used crutches for nearly a year thereafter, and one crutch for nearly two years, and that the broken leg became nearly three inches shorter than the other and not as strong, was so excessive as to require that it be set aside, unless plaintiff should enter a remittitur of \$1,500.—Kansas City Court of Appeals, Missouri, 144 S. W. R., 127.

#### Ordinances—Implied Repeal

*State ex rel. Rose v. Hindley, Mayor, et al.*—Rem. & Bal. Code provide for the creation of city boards of health, but that the provisions thereof do not apply to any city in which a board of health is organized and a health officer appointed under a special charter. Prior to December, 1910, the charter of Spokane provided for a board of health, and an ordinance of February, 1910, provided for the appointment by the board of health of a bacteriologist. In December, 1910, a new special charter, not providing for any board of public health, was adopted. Held, that the new charter repealed the old charter provisions for a board of health, and the ordinance providing for the appointment of a city bacteriologist was abrogated. The provision that every ordinance in force at the time of adoption shall continue, except so far as inconsistent, contained in Spokane Special Charter 1910, which did not provide for a board of health, will not continue in existence an ordinance providing for employees for a department of a board of health, that ordinance being wholly inconsistent with the charter. The provision that employees who are in office at the time of adoption shall retain their positions, unless removed for cause, contained in Spokane Special Charter 1910, which did not provide for any board of health, will not continue in office employees of the board of health provided for by the former charter.—Supreme Court of Washington, 121 P. R., 447.



## THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles, where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

## ROADS AND PAVEMENTS

**Highway Commission Work, Wisconsin.** Abstract of paper before Engineering Society of Wisconsin. By A. R. Hirst, acting State Highway Engineer. 1 p., Engineering Record, March 9. 10 cts.

**Instructions of Illinois Highway Commission for Making Road Surveys.** Illustrated, 3-4 p., Engineering & Contracting, March 20. 10 cts.

**State Administration of Public Highways in the United States.** Data concerning all the States of the country. 2 1-2 pp., Engineering News, March 28. 15 cts.

**Road Building, Contractors' Methods of.** By Daniel J. Hauer. 2 pp., Contractor, March 1. 20 cts.

**Economic Aspects of Highway Types.** Paper before Idaho Society of Engineers. By G. N. Little, professor of civil engineering, University of Idaho. 3 pp., Pacific Builder and Engineer, March 23. 15 cts.

**Methods and Cost of Constructing a Stone Gravel Road on a Sand Sub-grade.** By K. I. Sawyer, County Road Engineer, Michigan. Illustrated, 2 pp., Engineering & Contracting, March 13. 10 cts.

**Cost of Road Building in Various States.** 2 pp., Contractor, March 15. 20 cts.

**Cost of Operating a Steam Road Roller on Macadam Pavement Work.** By E. W. Robinson, assistant city engineer, Webb City, Mo. 1-3 p., Engineering & Contracting, March 20. 10 cts.

**Peel County Roads. Methods and Cost.** Paper before Ontario Good Roads Association. By C. R. Wheelock, county engineer. 1 p., Canadian Engineer, March 14. 10 cts.

**Tar Treatment of Macadam Road Surfaces.** From report of city engineer of Bristol, England. 1-2 p., Canadian Engineer, March 28. 10 cts.

**Tar and Tar Products.** Paper before American Gas Institute. By Mr. Whittaker. Illustrated, 6 pp., American Gas Light Journal, April 1. 10 cts.

**Tar Binding or Water Binding.** By G. B. Chilvers. 1 p., Surveyor, March 1. 40 cts.

**Utility of Coke Oven Tars as Road Materials.** Abstract from circular of U. S. office of Public Roads. 3-4 p., Engineering & Contracting, March 13. 10 cts.; 4 pp., Chemical Engineer, March. 25 cts.

**Tar and Road Work.** Its manufacture and characteristics. From report by Prevost Hubbard, chemist, U. S. Office of Public Roads. 3-4 p., Municipal Journal, March 28. 10 cts.

**Bitumens on Macadam Roads, Nozzle for Spraying.** Device used by Illinois Highway Commission. Illustrated, 1-2 p., Engineering Record, March 9. 10 cts.

**The Earlier Bituminous Concrete Pavements of Washington, D. C.** From paper before American Association for Advancement of Science. By Capt. Mark Brooke. 1 1-4 pp., Engineering & Contracting, March 20. 10 cts.

**Prepared Filler Macadam.** New method proposed by Chas. H. Hoyt, of U. S. Office of Public Roads. Illustrated, 1 p., Municipal Journal, March 21. 10 cts.

**An Asphaltic Gravel Macadam.** Experiences in constructing. By P. E. Green. 1 p., Municipal Journal, April 4. 10 cts.

**Chemistry of Modern Highway Engineering.** Paper before American Association for the Advancement of Science. By Prevost Hubbard. 2 1-2 pp., Surveyor, March 8. 40 cts.

**Dust on Macadam Roads, Some Methods of Preventing.** Paper before Engineering Society of Wisconsin. By John F. Icke, city engineer of Madison. Illustrated, 1 1-4 pp., Canadian Engineer, April 4. 10 cts. 1 p., Engineering Record, March 16. 10 cts.

**Locating a New Highway, Methods of, Over Florida Mountain in Western Massachusetts.** By Andrew M. Lovis, first assistant engineer, Massachusetts Highway Commission. Illustrated, 2 pp., Engineering & Contracting, March 6. 10 cts.

**Maintaining Good Roads, Who Should Pay for Building and? Editorial dis-**

**cussion.** 1 1-2 pp., Engineering News, March 14. 15 cts.

**Paving in 1911 and 1912.** Official figures for more than 500 cities, giving amounts of various kinds of pavement laid and proposed, and methods of assessing for sidewalks, curbs and gutters. 19 1-2 pp., Municipal Journal, March 21. 10 cts.

**Report on Repaving in New York City.** Synopsis of report of Nelson P. Lewis, chief engineer, Board of Estimate and Apportionment. 1 p., Good Roads, March 23. 5 cts.

**New York's Pavements.** Abstract of Report of New York Committee. 1 p., Municipal Journal, April 4. 10 cts.

**Considerations Affecting the Choice of Pavement.** 1-2 p., Engineering & Contracting, March 13. 10 cts.

**Characteristics and Cost of Standard Kind of Street Pavements.** From report of Commission on Comprehensive plan for developing streets of Cambridge, Mass. 3 1-2 pp., Engineering Record, March 16. 10 cts.

**Selection of Pavements.** From report of James E. Barlow, engineer of Bureau of Municipal Research of Cincinnati. 1 1-4 pp., Municipal Journal, March 21. 10 cts.

**Asphalt Repaving in Washington.** Economical age and cost of maintaining. 1-2 p., Municipal Journal, April 4. 10 cts.

**Brooklyn's Asphalt Pavements.** Explanation by Chief Engineer Schmidt, of maintenance records. Illustrated, 1 1-2 pp., Municipal Journal, March 14. 10 cts.

**Sheet Asphalt Paving Mixtures.** Method of handling. By H. B. Pullag, chief chemist American Asphaltum and Rubber Co. 1 p., Contract Record, March 13. 20 cts.

**Brick Pavements, Strain Measurements of.** Tests of temperature, variations and depression by street cars. Paper before National Brick Manufacturers Association. By James E. Howard, engineer-physicist, Bureau of Standards. Illustrated, 2 3-4 pp., Municipal Journal, April 4. 10 cts.

**Abrasion Tests of Brick.** Relative losses with old and new style rattlers, by light and dark bricks. 1-2 p., Municipal Journal, March 21. 10 cts.

**Wood Block Paving in Australia.** 1-4 p., Municipal Journal, March 21. 10 cts.

**Concrete Paving in Eight Cities.** In Kansas City and Liberty, Mo.; Marshalltown and Sioux City, Ia.; Bozeman, Mont.; Bemidji, Minn.; Appleton, Wis., and Greenville, Ill. One course and two course construction and expansion joints. By Clark R. Mandigo, W. H. Steiner, E. H. Collins, Carl C. Widener, W. M. Everts, Keyes C. Gaynor, C. H. Vinal and H. N. Baumberger, city engineers of the cities in question. Illustrated, 9 pp., Municipal Journal, March 21. 10 cts.

**Concrete Pavements.** Editorial discussion. 3-4 p., Municipal Journal, March 21. 10 cts.

**Hydraulic Concrete Pavements.** Discussion of methods of construction. By S. Whinery, consulting engineer. 1 1-4 pp., Municipal Journal, April 4. 10 cts.

**Experience with Concrete Pavements in Davenport.** From paper before Iowa Engineering Society. By A. M. Compton, Commissioner of Public Works. 3-4 p., Engineering & Contracting, March 20. 10 cts.

**Maintenance.** Some Erroneous Estimates of the Cost of Pavement. Comments on report of Cambridge Pavement Commission. 1 p., Engineering & Contracting, March 13. 10 cts.

**Recording, Interpreting and Estimating Road and Pavement Maintenance Costs.** Editorial discussion of proper methods. 1 p., Engineering & Contracting, March 20. 10 cts.

**Staking Out Paving Work, Methods of.** From paper before Iowa Engineering Society. By Theo. S. De Lay. 1-2 p., Engineering Record, March 23. 10 cts. 1-2 p., Engineering & Contracting, March 27. 10 cts.

**Sidewalks, Concrete.** General directions for laying. By S. B. Code. 2 pp.,

## SEWERAGE AND SANITATION

Engineering Magazine, March. 25 cts.

**Concrete Sidewalks in Florida.** 1-3 p., Municipal Journal, April 4. 10 cts.

**Curb Stones, Concrete.** Illustrated, 1-2 p., Municipal Journal, April 4. 10 cts.

**Sewerage of Glasgow.** By A. B. McDonald and G. M. Taylor. 1 p., Contract Journal, March 20. 25 cts.

**Cleveland Intercepting Sewer System.** Description of construction and contractor's methods. By J. M. Estep, assistant chief engineer, Department of Public Service. Illustrated, 4 pp., Engineering News, March 28. 15 cts.

**Sanitary Works for Uruguay.** 1 1-2 pp., Daily and Consular Trade Reports, March 22.

**Sewerage and Political Boundaries.** 1-4 p., Municipal Journal, April 4. 10 cts.

**Sewer, Salt Lake Outlet.** Partly comprising galvanized steel flume. Illustrated, 1-2 p., Engineering Record, March 9. 10 cts.

**Piney Branch Trunk Sewer Outlet, Rock Creek Park, Washington.** Decorative treatment of an outfall to which sewage flow is automatically regulated. Illustrated, 1 1-2 pp., Engineering Record, March 23. 10 cts.

**Enclosing a Sewage Laden Stream in a Triple Barrel Concrete Conduit.** Jones Falls Improvement, Baltimore. Design and contractor's plan. Illustrated, 2 1-2 pp., Engineering Record, March 16. 10 cts.

**Sewer Pipe in Kansas City, Mo., Concrete.** Illustrated, 2 pp., Concrete, March. 15 cts.

**Manufacture of Concrete Sewer Pipe for Brooklyn Bureau of Sewers.** From paper before National Association of Cement Users. By Gustave Kaufman. Illustrated, 1-2 p., Engineering & Contracting, March 27. 10 cts.

**Drain Tile Investigations at the Engineering Experiment Station, Ames, Ia.** Description of apparatus used. By A. O. Anderson. Illustrated, 2 pp., Cement, March. 10 cts.

**Reinforced Concrete Pipe Construction for Regina Sewer.** By W. R. Harris. 2 1-2 pp., Cement, March. 10 cts.

**Making Concrete Pipe at Temperatures Below Zero.** Forty-two-inch reinforced concrete pipe in Saskatchewan. 1-3 p., Engineering Record, March 16. 10 cts.

**Pump for Unscreened Sewage, Centrifugal.** English pump invented by Sir R. C. Parsons. Illustrated, 3-4 p., Engineering News, March 14. 15 cts.

**Stereophagus Sewage Pump.** Illustrated, 3-4 p., Power, April 2. 5 cts.

**Drainage Power Plant at New Orleans.** Mechanical Description. By Cecil P. Poole. Illustrated, 3 1-2 pp., Power, March 26. 5 cts.

**Sewer Gas? What Is.** Editorial discussion. 1-2 p., Municipal Journal, March 28. 10 cts.

**Contractor's Cost Keeping on Sewer Work.** Method employed by a Toronto firm. By F. W. Thorald. 2 pp., Contract Record, March 13. 20 cts.

**Treatment, Electrolytic Sewage.** Description of Oklahoma City plant. By Howard V. Hinckley, consulting engineer. Illustrated, 5 pp., Engineering News, March 21. 15 cts.

**A Quarter Century of Attempts to Utilize Electricity in Sewage and Water Purification.** Editorial. 2 pp., Engineering News, March 21. 15 cts.

**Relation of the Putrescibility of the Settling and Non-settling Suspended Matter in Sewage.** Paper before American Public Health Association. By Arthur Lederer. 2 1-4 pp., Canadian Engineer, March 14. 10 cts.

**Sewage Sludge and Its Disposal.** Paper before Society of Chemical Industry. By J. Grossmann. 3 pp., Surveyor, March 1. 40 cts.

**Stability of Effluents from Contact and Trickling Filters.** From report of H. W. Clark and S. D. Gage, of Lawrence Experiment Station. 1-2 p., Engineering Record, March 9. 10 cts.

**Remedying Offensive Odors at the Maldstone Sewage Works, England.** 1-3 p., Engineering News, March 7. 15 cts.

**Pittsburgh Sewage Purification Order.** Letters from State Commissioner Dixon and Mayor Magee, concerning State Board of Health order to purify sewage. 4 pp., Engineering News, March 21. 15 cts.

**Sewage Purification at Atlanta.** Description of plant containing grit chamber, screen, sludge drying bed, roughing filters, etc. By Wm. A. Hansell, assistant in charge. Illustrated, 4 1-2 pp., Engineering News, March 14. 15 cts.

**Utilization of Sludge in England.** Grease, fertilizer base, gas and ammonia obtained from it. By L. Batley, late Superintendent of Sewage Works, Bradford, England. 1 p., Municipal Journal, March 28. 10 cts.

**Operation of Sewage Disposal Plants.** Paper before Kansas Society of Engineers. By Chester A. Smith. 1-4 pp., Contract Record, March 13. 20 cts.

**Polluted Estuaries, Growths of Sea Weeds in Sewage.** From report of Royal Commission on Sewage Disposal. 2 1-2 pp., Water, March 15. 25 cts.

**Health Officer Qualifications.** From paper before Society for Promotion of Engineering Education. By Prof. Geo. C. Whipple. 1-4 p., Municipal Journal, March 14. 10 cts.

**Ordinances, Rules and Regulations Pertaining to Public Hygiene, Municipal.** 3 pp., Public Health Reports, March 8; 4 1-2 pp., March 22; 5 1-2 pp., March 29.

**Cholera, The Bacteriological Diagnosis of.** 28 pp., Public Health Reports, March 15.

**Tunnel, Excavating a Rochester Sewer.** Description of contractor's methods. Illustrated, 3 pp., The Contractor, March 1. 20 cts.

**Typhoid Outbreak, Cedar Falls, Ia.** Result of study of outbreak. By A. L. Grover, of University of Iowa, and R. B. Dole, chemist U. S. Geological Survey. Illustrated, 1 1-2 pp., Engineering News, March 21. 15 cts.

**Mosquitoes, Sewage Works and Catch Basins as Breeding Grounds of.** By Edwin H. T. Nash, medical health officer, Wimbledon. Illustrated, 2 3-4 pp., Surveyor, March 15. 40 cts.

**Sanitary Engineering at Harvard University.** From Bulletin of Society for Promotion of Engineering Education. By Prof. Geo. C. Whipple. 1 1-2 pp., Engineering News, March 28. 15 cts.

## WATER SUPPLY

**Water Works System of Denver.** Illustrated, 2 1-2 pp., Fire and Water, April 3. 10 cts.

**Erie Water Works Improvements.** By Thos. Fleming, Jr. Illustrated, 2 1-2 pp., Municipal Journal, April 4. 10 cts.

**Water Supply from Upland Drainage Areas.** From paper before Royal Sanitary Institute. By Prof. J. Radcliffe. 1 1-2 pp., Surveyor, March 15. 40 cts.

**The Value of Pure Water.** From paper before Indiana Sanitary and Water Supply Association. By Chas. B. Burdick. 1 p., Engineering Record, March 16. 10 cts.

**The Necessity for Safe Water Supplies in the Control of Typhoid Fever.** By Allan J. McLaughlin. 11 pp., Public Health Reports, March 22.

**Insufficient Water Capacity at Flint, Mich.** Report of National Board of Fire Underwriters. 1 p., Fire and Water, March 6. 10 cts.

**Well, Rigging for Driving Small Pipe.** Illustrated, 1-4 p., Power, April 2. 5 cts.

**Dam Trenches, Geology of.** Investigation of sites and conditions affecting stability. By Herbert Lapworth, Geological and civil engineer, London. Illustrated, 4 1-4 pp., Engineering News, March 14. 15 cts.

**Method for Computing the Size of Spillway for a Dam.** Mathematical computation. By H. K. Palmer, junior engineer, U. S. Indian Service. Illustrated, 1 1-2 pp., Engineering News, March 21. 15 cts.

**High Dams of Great Length.** 1 1-4 pp., Contract Journal, March 20. 25 cts.

**Reservoirs, Twin, at Brockton, Mass.** Two masonry reservoirs 26 ft. high. Illustrated, 2 pp., Fire and Water, March 13. 10 cts.

**Equalizer Reservoir on a Gravity Flow Line.** Reservoir and pipe line at Austin, Minn. Illustrated, 1 p., Engineering Record, March 30. 10 cts.

**Aqueduct, Concrete Work on the Catskill.** Grouting leaky shafts and covering steel pipe. Illustrated, 3 1-2 pp., Concrete, March. 15 cts.

**Notable Work on the Catskill Aqueduct.** Illustrated, 1 3-4 pp., Fire and Water, March 6. 10 cts.

**Preventing Leakage from the Washington Aqueduct at Cabin John Bridge.**

**Lining old brick conduit with cast iron segments.** Illustrated, 1 1-3 pp., Engineering Record, March 9. 10 cts.

**Laying a Submerged Flexible-Joint Water Main in a Swift Mountain Stream.** Paper before Institution of Mining and Metallurgy. By Frank Reed. Illustrated, 1 2-3 pp., Engineering News, April 4. 15 cts.

**Pump, Air Lift—Its Advantages and Disadvantages.** Abstract of Bulletin of University of Wisconsin. Illustrated, 4 pp., Canadian Engineer, April 4. 10 cts.

**An Electrical Addition to a Steam Pumping Plant at Toronto, Ont.** Illustrated, 1 3-4 pp., Canadian Engineer, March 28. 10 cts.

**New 18,000,000-Gallon Units in New York's Ninety-eighth Street Pumping Station.** Illustrated, 1 1-4 pp., Engineering Record, March 9. 10 cts.

**Small Things in the Operation of a Pumping Station.** From paper before Illinois Water Supply Association. By M. M. Symons, chief engineer, Danville Water Co. 3-4 p., Engineering Record, March 23. 10 cts.

**Evolution and Present Development of the Turbine Pump.** By Edward Hopkinson and A. E. L. Chorlton. Illustrated, 3 1-2 pp., Water, March 15. 25 cts.

**Filtration, Purification of Water by.** General statement. Paper before Cleveland Engineering Society. By R. Winthrop Pratt. 1 p., Canadian Engineer, April 4. 10 cts.

**Condition of Old Mechanical Filters.** Report concerning 20-year-old plant at Quincy, Ill. 1-4 pp., Engineering Record, March 30. 10 cts.

**Rapid Mechanical Filtration Plant of the Montreal Water and Power Company.** Details of a 30,000,000-gallon plant. Illustrated, 2 pp., Engineering Record, March 9. 10 cts.

**Operating Results at the Steelton Filters.** From report of M. B. Litch, chemist in charge. 2-3 p., Engineering Record, March 23. 10 cts.

**Rapid Mechanical Filtration at Montreal.** Illustrated, 4 pp., Contract Record, March 13. 20 cts.

**Operation of a Million-Gallon Filter.** Paper before Illinois Water Supply Association. By Mayor John M. Keefer. 1 p., Fire and Water, March 20. 10 cts.

**Disinfecting Lake Water with Calcium Hypochlorite.** From paper before Illinois Water Supply Association. By Arthur Lederer, chemist and bacteriologist, Sanitary District of Chicago. 1 1-2 pp., Engineering Record, March 30. 10 cts.

**Reinforced Concrete for Hypochlorite Solution Tanks.** From paper before National Association of Cement Users. By Walter M. Cross, city chemist, Kansas City, Mo. 3-4 p., Engineering Record, March 23. 10 cts.

**Evanston's Experience in Hypochlorite of Lime and Typhoid Fever.** Summary of results of sterilizing Lake Michigan water. By W. Lee Lewis, city chemist. Illustrated, 1 1-2 pp., Engineering Record, March 16. 10 cts.

**Disinfection of Water by Chemicals.** General statement. Paper before Cleveland Engineering Society. By R. G. Perkins. 1 1-2 pp., Canadian Engineer, April 4. 10 cts.

**Evanston, Ill., Hypochlorite Plant.** Design and decrease of typhoid resulting. By C. C. Saner, Deputy Commissioner of Public Works. Illustrated, 1 p., Engineering and Contracting, March 27. 10 cts.

**Hypochlorite Water Sterilization Plant at Kansas City.** Description of construction. Illustrated, 1 p., Engineering and Contracting, March 20. 10 cts.

**Hypochlorite Plant, Cleveland, O.** Description of temporary plant. By C. F. Schulz, Superintendent of Water Supply. Illustrated, 1 1-2 pp., Engineering News, March 7. 15 cts.

**Bacterial Contents of Allegheny, Monongahela and Ohio Rivers at and below Pittsburgh.** 1-3 p., Engineering News, March 14. 15 cts.

**Management of Water Plants in Smaller Cities.** Paper before Indiana Sanitary and Water Supply Association. By E. L. Loomis. 1 1-4 pp., Fire and Water, March 13. 10 cts.

**Water Department Methods.** Abstract of paper before Illinois Water Supply Association; meters, free water, charging by frontage. By W. J. Spaulding, commissioner of public property, Springfield, Ill. 1 p., Engineering Record, March 16. 10 cts.

**Coming Efficiency in Water Works Management.** Paper before New England Water Works Association. By W. H. Richards. 1 1-2 pp., Canadian Engineer, March 28. 10 cts.

**Meters, Do Water, Increase Revenue and Reduce Consumption.** Paper before Illinois Water Supply Association. By R. R. Parkin, superintendent Elgin Water

**Works.** 3-4 p., Fire and Water, March 20. 10 cts.

**Effect of Water Meters in Reducing Waste at Decatur.** Abstract of paper before Illinois Water Supply Association. By F. H. Ruthrauff. 1-2 p., Engineering News, April 4. 15 cts.

**Water Waste Surveys at Milwaukee.** Synopsis of report of Bureau of Economy and Efficiency. 7 1-2 pp., Engineering News, March 14. 15 cts.

**Water Measurement and Prevention of Water Waste in New York City.** Official Statement of Commissioner H. S. Thompson. Illustrated, 2 pp., Engineering News, March 14. 15 cts.

**Pitometer Survey of Water Mains.** Illustrated, 1 1-2 pp., Canadian Engineer, March 21. 10 cts.

**Milwaukee Water Waste Survey.** Slip of pumps and meters, and waste elimination. From report of Bureau of Economy and Efficiency. Illustrated, 1 3-4 pp., Municipal Journal, March 14. 10 cts.

**Frozen Solid, Contents of a 6-Inch Water Main at Springfield, Mass.** By Elbert E. Lochridge, chief engineer of Water Department. Illustrated, 2-3 p., Engineering News, March 7. 15 cts.

## STREET LIGHTING & POWER PLANTS

**Street Lighting in Joliet, Ornamental.** Illustrated, 1 1-2 pp., Good Lighting, March. 20 cts.

**"White Way" Lighting in Fort Worth, Tex.** By Robert Montgomery. Illustrated, 2 pp., Good Lighting, March. 20 cts.

**The Gas White Way in New Haven.** By J. A. Norcross, Secretary Gas Light Company. Illustrated, 1 p., Progressive Age, April 1. 15 cts.

**The New Ornamental Cluster Lighting at Pasco, Wash.** By R. J. Andrus. Illustrated, 3 pp., Good Lighting, February. 20 cts.

**The Latest Word in Electric Street Lighting.** Luminous arc lamps at New Haven. Illustrated, 3 pp., Good Lighting, February. 20 cts.

**Lamp Posts, Baltimore, New Design of Municipal Art Commission.** Illustrated, 1-4 p., Municipal Journal, March 14. 10 cts.

**Ornamental Gas Lamp Post of Novel Design.** Illustrated, 1 p., Illuminating Engineer, February. 20 cts.

**Wires, Specifications for Overhead.** Adopted by the city of Seattle, Wash. By H. L. Estep. 1 p., Engineering News, March 21. 15 cts.

**Gas Mains at New Haven, Submerged.** Paper before New England Association of Gas Engineers. By H. E. White, Superintendent Street Department. 1 p., Progressive Age, April 1. 15 cts.

**Flow of Gas in Mains, Theoretical and technical treatise.** By J. W. Batten. Illustrated, 6 1-2 pp., American Gas Light Journal, March 4. 10 cts.

**Survey of American Gas Photometry.** Paper before American Gas Institute. By C. O. Bond. Illustrated, 5 1-2 pp., American Gas Light Journal, March 18. 10 cts.

**The Gas Industry in the United States for the Year 1909.** By Chas. E. Munroe, Professor of Chemistry, George Washington University. 2 1-2 pp., Progressive Age, March 15; 3 1-4 pp., April 1. 15 cts.

**Worcester Gas Affairs.** Figures of consumption and rates. 1 3-4 pp., Progressive Age, March 1. 15 cts.

**Acetylene Town Plants.** 1-2 p., Progressive Age, April 1. 15 cts.

**Recent Developments in the Manufacture of Water Gas.** Paper before New England Association of Gas Engineers. By Viggo E. Bird. 4 pp., American Gas Light Journal, April 1. 10 cts.

**Sliding Scale, The London.** By G. A. Gesell. 4 1-2 pp., Pacific Municipalities, Feb. 29. 20 cts.

**Engines, Reversing Gas and Oil.** Mechanical description. By B. A. Mevin. Illustrated, 3 1-2 pp., Power, April 2. 5 cts.

**Coal, Purchase, Proposed Basis for.** Substitute for B. t. u. basis. By John P. Cosgrove. 1 1-4 pp., Power, March 12. 5 cts.

## FIRE AND POLICE

**Houston Swept by Conflagration.** Popular description of fire. Illustrated, 1 1-2 pp., Fire and Water, March 6. 10 cts.

**The Fire at Houston, Texas.** Description of the fire of Feb. 21. By J. W. Maxcy, civil engineer. Illustrated, 1 p., Engineering News, March 7. 15 cts.

**School Houses, When Will, Stop Burning?** \$1,000,000 in school house fires in two months. Illustrated, 13 pp., Insurance Engineering, March. 25 cts.



**Fire Hazard at Battle Creek.** Report by National Board of Fire Underwriters. 1 p., Fire and Water, March 27. 10 cts.

**Building Construction in Relation to Fire Hazard.** By Lawrence H. Fryer. Illustrated, 2 1-2 pp., Contract Journal, Feb. 28; 1 1-2 pp., March 13. 25 cts.

**Fire Prevention Bureau, New York's.** 2-3 p., Fire and Water, March 20. 10 cts.

**Committee on Safety of New York City.** Its purpose defined. 1 1-2 pp., Insurance Engineering, March. 25 cts.

**Fire Fighting, Effectiveness of Hose Streams in.** By Howard A. Dill, Supt. Richmond Water Works. 2 1-2 pp., Fire and Water, April 3. 10 cts.

**Mutual Aid System.** Co-operation of Boston and surrounding towns. Illustrated, 1 p., Fireman's Herald, March 9. 5 cts.

## GOVERNMENT AND FINANCE

**Commission Plan of City Government.** Progress of the. List of cities adopting it to Jan. 1. 1 1-2 pp., Engineering News, April 4. 15 cts.

**Municipal Ownership of Public Utilities.** Paper before League of Nebraska Municipalities. By Don L. Love. 4 1-2 pp., The City Hall, April. 25 cts.

**Public Service Industries, Some Criteria of Value in.** By Clarence P. Fowler. 14 pp., Engineering Magazine, March. 25 cts.

**Regulation of Public Utilities.** By F. W. Stone, manager Ashtabula Gas Co. 1 1-4 pp., Progressive Age, March 15. 15 cts.

**Public Utilities Act of California and Its Relation to Municipalities.** By Max Thelen, attorney for State Railway Commission. 6 1-2 pp., Pacific Municipalities, Feb. 29. 20 cts.

**State vs. City Control of Public Utilities.** By John Dailey. 1 1-2 pp., Public Service Regulation, March. 25 cts.

**In Defense of the American City.** Wherein they are well governed. By Frederic C. Howe. 7 pp., Scribner's Magazine, April. 25 cts.

**Accounting, Unification of Municipal.** Paper before League of Nebraska Municipalities. By Fred H. Cosgrove, controller of Omaha. 4 1-2 pp., The City Hall, April. 25 cts.

**Classified Municipal Expense Accounts.** Discussion of Fundamental Principles. 1 1-2 pp., Contract Record, March 20. 20 cts.

**Some Distinctions Between Governmental and Commercial Accounting.** By Chas. Perley Smith. 5 pp., Government Accountant, March. 15 cts.

## STRUCTURES AND MATERIALS

**Cement Briquettes, Five-Year Tests on.** Showing decrease in tensile strength. Tests conducted by A. T. & S. F. R. R. By C. A. Morse, chief engineer. 3-4 p., Engineering News, March 14. 15 cts.

**A Municipal Cement Mill.** Description of Los Angeles Plant. By Burt A. Heintz. Illustrated, 2 1-4 pp., Municipal Journal, March 28. 10 cts.

**Concrete Surfaces, Finishing.** By Jerome Cochran. 21 pp., Cornell Civil Engineer, March. 25 cts.

**Specifications and Methods of Tests for Concrete Materials.** Report of Committee of National Association of Cement Users. 1 1-4 pp., Engineering Record, March 30. 10 cts.

**Field Compression Tests of Concrete.** Results of tests on large cubes for fifteen months. Illustrated, 2 pp., Engineering News, March 28. 15 cts.

**Handling of Concrete Materials.** By Daniel J. Hauer. 1 3-4 pp., Contract Record, March 20. 20 cts.; 2 pp., Contractor, March 15. 20 cts.

**Steel in Concrete, Electrolytic Corrosion of.** 1 1-2 pp., Cement, March. 10 cts.

**Bridge at Kansas City, Concrete.** Description of construction of 72-foot span. Illustrated, 3 3-4 pp., Cement Age, March. 15 cts.

**Standard Practice in Reinforced Concrete Highway Bridges and Culverts in Iowa.** Illustrated, 1 p., Engineering & Contracting, March 13. 10 cts.

**Ornamental Concrete Highway Bridge.** Seventy-two-foot span in Kansas City, Mo. Details of construction. Illustrated, 2 pp., Engineering Record, March 23. 10 cts.

**Viaduct at Fitchburg, Mass.** Fifth Street. Reinforced concrete 650 feet long. Illustrated, 1 1-2 pp., Engineering Record, March 9. 10 cts.

**Reinforced Concrete Viaduct Carrying a Seattle Street Over Railway Yards.** By

E. E. Adams, assistant engineer, Great Northern Railway. Illustrated, 4 1-2 pp., Engineering News, March 21. 15 cts.

## MISCELLANEOUS

**Street Cleaning in Washington, D. C.** Figures concerning work done in 1911. 1-2 p., Municipal Journal, March 14. 10 cts.

**Street Flushing in Boston and Hartford.** Methods employed. 1-3 p., Municipal Journal, March 28. 10 cts.

**City Waste Studies in Ohio Cities.** Synopsis of report by engineers of State Board of Health. 2 pp., Engineering News, March 28. 15 cts.

**Garbage Collection in Milwaukee.** Methods, present and proposed. From report by Bureau of Economy and Efficiency. 2 pp., Engineering & Contracting, March 20. 10 cts.

**Methods of Disposal of Municipal Refuse.** A review of progress of the art and data of operation of Cleveland and Buffalo plants. 3 pp., Engineering & Contracting, March 13. 10 cts.

**Report on Refuse Disposal in Ohio Cities.** From report of State Board of Health. 1 p., Engineering Record, March 23. 10 cts.

**Transit Developments in London, England.** By H. Rayner Wilson. 1-2 p., Engineering News, March 7. 15 cts.

**Trolley Vehicle System of Railless Traction.** Paper before Society of Engineers. By Henry C. Adams. 2 1-2 pp., Surveyor, March 8. 40 cts.

**Ozonized Air in London Subway.** Description of plant and results. 3-4 p., Engineering Record, March 23. 10 cts.

**Grade Crossing Elimination Work in Connecticut.** By R. S. Hulbert, division engineer, Connecticut State Highways. Illustrated, 2 1-2 pp., Good Roads, March 9. 5 cts.

**Shade Trees on Highways.** Rights and Powers of city and abutting owner respectively, as fixed by court decisions in number of States. 1 1-4 pp., Municipal Journal, March 21. 10 cts.

**Landscape Art and City Design.** By Malcolm M. Ross, Park Supt., Regina. 2 pp., Canadian Engineer, March 28. 10 cts.

**Park, Novel Ideas in a California.** Sprinkler system, fountain and benches. 3-4 p., Municipal Journal, April 4. 10 cts.

**Street Appliances, Some Boston.** Street signs and rubbish cans. Illustrated, 1 p., Municipal Journal, March 28. 10 cts.

**Odd Ornaments for Street Corners.** Some Los Angeles features. Illustrated, 1-2 p., Municipal Journal, March 14. 10 cts.

**Recreation Centers.** Brief descriptions of a large number throughout the United States. 17 1-2 pp., The Playground, April. 25 cts.

**Harbor, Chicago River and Chicago.** Abstract of paper before Western Society of Engineers. By Col. Geo. A. Zinn, U. S. A. 1 1-2 pp., Engineering News, March 21. 15 cts.

**County Hall, London's New.** Illustrated, 1 p., Municipal Journal (London), March 16. 15 cts.

**Shops, Boston Municipal Yards and.** Harness, paint, blacksmith, carpenter, wheelwright and horse shoeing shops. Illustrated, 2 pp., Municipal Journal, March 14. 10 cts.

**Census Bureau, What the, Is Doing to Help Cities Solve Their Problems.** Address before City Club of Philadelphia. By E. Dana Durand, Director of the Census. 9 pp., City Club Bulletin, March 11.

**Swimming Pool, Heating a.** Paper before American Society of Heating and Ventilating Engineers. By C. Teran. Illustrated, 3-4 p., Canadian Engineer, March 14. 10 cts.

**Flood of March 22 at Pittsburgh, Pa.** Physical phenomena and damages. By Kenneth C. Grant, principal assistant engineer, Flood Commission. 2 1-3 pp., Engineering News, April 4. 15 cts.

**Building Code of Verona, N. J.** Favorable comment. 2 pp., Insurance Engineering, March. 25 cts.

**Stereographic Measurement.** Making measurements from photograph. By C. R. Anderson, associate professor of photography, University of Toronto. Illustrated, 2 1-2 pp., Canadian Engineer, March 28. 10 cts.

**Specifications, The Writing of.** By H. P. Breitenbach, instructor in English, Engineering Department, University of Michigan. 3 pp., Engineering News, March 7. 15 cts.

**Principles of Specification and Agreement Writing.** By C. R. Young. 3 1-2

pp., Canadian Engineer, March 21. 10 cts.; 2 3-4 pp., April 4. 10 cts.

**Fees for Consulting Engineers, A Code of Ethics and Schedule of.** Recently adopted by Pacific Association of Consulting Engineers. 3-4 p., Engineering News, March 14. 15 cts.

**Cost-Keeping and Organization, Contractors'. From paper before Brooklyn Engineers Club.** By Richard L. Russell. 4 pp., Contractor, March 1. 20 cts.

**Inspection and Cost Data.** Forms for reports and methods of calculation. From paper before Indiana Engineering Society. By F. O. Hodson, chief inspector of Gary. 2 1-4 pp., Municipal Journal, March 28. 10 cts.

**Coffer-Dams and Steel Sheet Piling.** Paper before American Society of Engineering Contractors. By E. Wegman and J. R. Wemlinger. Illustrated, 3 1-2 pp., Contractor, March 15. 20 cts.

**Cement Gun, The.** By Wm. A. Jordan. Illustrated, 2 pp., Engineering Magazine, April. 25 cts.

**Weirs, Flow Through Triangular Notches.** Tests at the Cornell hydraulic laboratory. By R. B. Daudt. Illustrated, 10 pp., Cornell Civil Engineer, March. 25 cts.

## BOOK REVIEWS

**An Introduction to the Theory of Statistics.**—By G. Udny Yule. Philadelphia: J. B. Lippincott Co., 1911. Cloth, 5½x7½, 371 pp.

This book is based on a course of instruction given at the University College, London. The author states his purpose in the following words: "The volume represents an attempt to work out a systematic introductory course on statistical methods—the methods available for discussing, as distinct from collecting statistical data, suited to those who possess only a limited knowledge of mathematics; an acquaintance with algebra up to the binomial theorem, together with such elements of co-ordinate geometry as are now generally included therewith, is all that is assumed." The book is divided into three parts: The Theory of Attributes, the Theory of Variables and the Theory of Sampling.

**National Association of Cement Users.** Proceedings of the Seventh Annual Convention.—Edited by the President. Published by the Association, 1911. Illustrated, 868 pp.

A majority of the papers are of interest to the architect and builder. Several are general in their scope, and among those of special interest to municipal engineers and contractors are the following: Report of the Committee on Roadways, Sidewalks and Floors, C. W. Boynton, Chairman. Some New Methods in Sidewalk and Curb and Gutter Construction, by Jerome B. Lanfield. Proposed Standard Specifications for Concrete Drain Pipe and Tile. Two of the topical discussions were on strictly municipal subjects, namely, Waterproofing of Sewers and Roadways, Sidewalks and Floors. Two papers of general interest on the handling concrete in new ways were as follows: Use of Compressed Air in Handling Mortars and Concrete, by G. L. Prentiss, and The Spouting of Concrete, by Fred E. Engstrom.

**Engineering as a Vocation.** By Ernest McCullough, M. Am. Soc. C. E. Cloth, 8¼ x 5½ in., illus., 201 pp. New York: David Williams Co., 1911. \$1.

The preface states that the subject matter contained in this book was first given as a series of addresses before technical schools and engineering assistants. The author has rearranged and added to the text and states that it is issued in book form "for the information of parents in order that they may act wisely in selecting careers for their sons." He outlines the personal qualities necessary to a successful engineer, the work that will be required of him, his education, comparing the American system with that of Europe, etc., and states that his opinions in regard to wholesale technical education do not coincide with those generally found in semi-technical periodicals and daily newspapers. The chapter headings are: The Engineer; The Work of the Engineer; The Education of the Engineer; Home Study Courses; How to Hunt and Hold a Job; Does It Pay to Study Engineering?; The Opinions of Engineering Editors.

## NEWS OF THE SOCIETIES

### Fourth National Conference on City Planning

Secretary Flavel Shurtleff, 19 Congress street, Boston, Mass., has made the following announcement regarding the meeting to be held at Boston, May 27-29:

The conference will be entertained by the City of Boston.

An exhibit of city planning illustrating the programme of the conference will be held in the Boston Public Library.

#### Programme.

Monday, May 27, His Honor, Mayor John F. Fitzgerald, will give a luncheon to members of the conference from 12 to 2, which will be followed by a city planning automobile tour of the city for members of the conference, delegates and specially invited guests.

Sessions of the conference will begin Monday evening, and the following subjects will be discussed:

1. "The Meaning and Progress of City Planning." The papers and discussions will consider the development of the city planning idea, the growth of city planning organizations, and the methods of campaigning for a city plan.

2. "City Planning Studies of Specific Areas." The papers and discussions will consider the social and economic value of planning ahead for different types of areas.

3. "How the City Planning Bills Are to Be Paid." The papers and discussions will consider a more equitable distribution of the cost of public improvements.

4. "The 'Zoning' Principle of Germany Applied to the United States."

One session of the conference will be left open and the questions discussed will be selected from suggestions of members of the conference and others interested in the subject of city planning. A selection will be made from the following topics:

1. Transit and the housing problem.

2. How can the proper distance apart of thoroughfares suitable for carrying car lines best be determined?

3. Purchase of school lots, playgrounds and small parks in advance of requirements.

4. The effect of the motor truck on the location of factories and the distribution of population.

5. The co-ordination and co-operation of municipal departments having charge of municipal improvements.

6. How to relieve congestion of retail shopping districts.

7. What can properly be laid down in the way of theory or ideals concerning the system or systems of circulation in present day cities?

8. A Federal bureau or department of city planning.

9. The advantages of the uses of autobuses over trolley cars.

10. The use of excess condemnation to eliminate slums.

The conference will close with a dinner at which the members of the conference will be invited guests.

The speakers will be announced later. The annual membership fee of \$5 entitles members residing outside of the metropolitan district of Boston to all the privileges of the meeting, including the closing dinner, and to a copy of the proceedings.

Delegates and guests of the conference who do not wish to take membership are invited to the conference sessions, the Mayor's luncheon, the automobile trip, and may receive cards to the closing dinner on payment of the subscription price.

The secretary of the conference, Flavel Shurtleff, 19 Congress street, Boston, Mass., will be glad to answer inquiries.

### Convention of Commercial Organizations

The favorable responses by commercial organizations to the invitation of the Secretary of Commerce and Labor to designate representatives to attend a conference at Washington to discuss the establishment of a national organization have been so numerous that, in order to assure adequate hotel accommodations for the delegates, it has been found necessary to fix the date of this conference on April 22, instead of April 15. The membership of the national organization is to consist of chambers of commerce, boards of trade and kindred associations which are democratic in their organization and broadly representative of the commercial interests of the districts which they serve; and such trade and industrial organizations as are national in their scope.

### Calendar of Meetings

#### April 16-17.

Tri-State Water and Light Association of the Carolinas and Georgia.—Annual Meeting, Salisbury, N. C.—J. W. Neave, Secretary, Salisbury, N. C.

#### April 18-20.

American Electrochemical Society.—J. W. Richards, Secretary, Lehigh University, South Bethlehem, Pa.

#### April 22.

Commercial Organizations of the United States.—Convention for Purpose of Forming Permanent Organization, Washington, D. C.—Secretary Commerce and Labor, Washington, D. C.

#### May 14-17.

National Fire Protection Association.—Annual Meeting, Chicago, Ill.—F. H. Wentworth, Secretary, 87 Mill Street, Boston, Mass.

#### May 16-18.

Ohio Society of Mechanical, Electrical and Steam Engineers.—Annual Meeting, Pittsburgh, Pa.—F. E. Sanborn, Secretary, Ohio State University, Columbus, O.

#### May 28-31.

American Society of Mechanical Engineers.—Special Meeting, Cleveland, O.—C. W. Rice, Secretary, 29 W. 39th Street, New York City.

#### May 27-29.

Fourth National Conference on City Planning.—Meeting, Public Library, Boston, Mass.—Flavel Shurtleff, Secretary, 19 Congress Street, Boston, Mass.

#### June 3-8.

American Water Works Association.—Annual Convention, Louisville, Ky.—John M. Diven, Secretary, Troy, N. Y.

#### June 11-12.

Police Chiefs and City Marshals' Association of Texas.—Convention, San Angelo, Tex.

#### June 10-12.

Mayors Conference of New York.—Third Annual Meeting, Utica, June 10-12.—Mayor C. C. Duryee, President, Schenectady, N. Y.—C. C. Capes, Secretary, New York.

#### September 24-26.

Central States Water Works Association.—Sixteenth Annual Convention, Detroit, Mich.—R. P. Bricker, Secretary, Shelby, O.

## PERSONALS

ARD, DR. F. C., Plainfield, N. J., has been elected president of the Union County Mosquito Extermination Commission.

CONVERSE, Frank D., New York City, has been elected chief of police at Manchester, N. Y.

ELMERSON, Guy C., Boston, Mass. consulting engineer of the Finance Commission and former Superintendent of Streets, has been elected chief consulting and directing engineer of the directors of the port of Boston.

FROST, Harry H., superintendent of the Akron, O., water works, has been appointed superintendent of the municipal plant.

JOHNSTON, H. A., City Engineer, Kalamazoo, Mich., has resigned. Mr. Johnson will open an office as consulting engineer.

McAFEE, Samuel, Sherman, Tex., has been elected chief of police.

MELVY, Edward, Lowell, Mass., one of the oldest members of the fire department, has resigned his position on the Board of Fire Engineers. Mr. Melvy has seen 51 years of service for the city.

ROSE, A. L., Rochester, N. Y., has been engaged as Superintendent of Parks at Akron, O.

VOSBURG, Noble, Clinton, Ia., has been appointed Chief of Police.

WRIGHT, J. W., Dr., Erie, Pa., has been elected Health Officer for the seventeenth consecutive year.

WHEELER, Edw. Jr., Rochester, N. Y., has been appointed Fire Marshal to succeed Herbert W. Pierce, who, at the beginning of the year, became Commissioner of Public Works.

The following mayors have been elected:

#### TEXAS

Big Springs.—S. T. Teatts.  
Cumby.—G. M. Morton.  
Cleburne.—C. W. Breech.  
Denton.—Ed. W. Bates.  
Forney.—W. D. Adams.  
Georgetown.—R. E. Ward.  
Gilmer.—T. H. Briggs.  
Henrietta.—F. P. Neville.  
Iowa Park.—J. F. Boyd.  
McGregor.—Dr. A. J. Sewell.  
Mexia.—Frank Smith.  
Miles.—H. W. Bigler.  
Nacogdoches.—George Mathews.  
Plano.—J. B. Harris.  
Paris.—Ed. H. McCuistian.  
Pittsburg.—J. F. Reynolds.  
San Angelo.—W. T. Bishop.  
Taylor.—C. M. Still.  
Waco.—J. H. MacKey.  
Weatherford.—Hugh McGrattan.  
Wichita Falls.—Dr. J. M. Bell.

#### KANSAS

Arkansas City.—Jack Reid.  
Abilene.—W. D. Nichols.  
Cherryvale.—S. J. Harmon.  
Dodge City.—H. B. Bell.  
Hutchinson.—Frank Vincent.  
Manhattan.—S. F. Gohean.

#### CONNECTICUT

Hartford.—Louis R. Cheney.

#### MAINE

Calais.—Herbert Dudley.

#### ARKANSAS

Fort Smith.—Peter Stewart.

#### NEW YORK

Jamestown.—Samuel A. Carlson.

#### MISSISSIPPI

Monticello.—D. M. Cashion.

#### NORTH DAKOTA

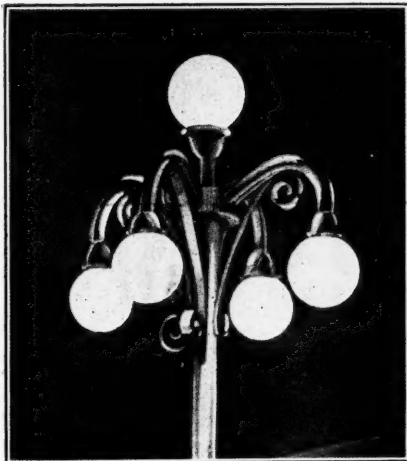
Bismarck.—T. J. Haugeberg.



## MUNICIPAL APPLIANCES

### Alba Globes for Ornamental Street Lighting

The Macbeth-Evans Glass Company, Pittsburgh, Pa., manufacture Alba globes for ornamental street lighting. The objects sought to be attained by ornamental street lighting are: The commercial development of the city—"trade follows the light"; illumination value—safety and comfort of vehicles and pedestrians; civic beauty—enjoyment of the city by its citizens. The use of Alba globes, according to the manufacturers, contributes to all of these objects.



CLUSTER OF ALBA GLOBES.

Alba is a white diffusing glass of very low light absorption. That is, a large percentage of the light passes through it and it spreads the illumination over a wide area. It affords protection against the discomfort caused when the light source is plainly visible. An Alba globe is evenly illuminated over its entire surface and does not present any bright spots in the immediate region of the lamp it encloses. It is a ball of light. In the daytime it has a snowy-white color and at night transmits the true color of the light as it comes from the lamp. Many opal, opalescent and alabaster globes have excessive selective absorption, causing a pronounced reddish tinge in the light that passes through them, resulting in an unattractive appearance. Alba globes are smooth both inside and out and therefore do not collect dirt and may be easily cleaned. In some cases they are cleaned merely by wiping them with a dry cloth when making lamp renewals. For durability Alba globes are claimed to be unexcelled. Sand-blasting glass—which is the commonest way of making it clouded—weakens it. Crystal-roughed-inside globes are somewhat fragile. According to reports from users the breakage of Alba globes is almost invariably due to accidents, not to any weakness of the glass.

In the following table are shown results of five photometric tests of ornamental street installations in regular service. In all but one of these installations Alba globes were used. In the other crystal-roughed-inside globes were used, and it is significant that much less satisfactory lighting results were obtained. When you add to this the cost of frequent cleaning of crystal-

roughed-inside and the consequent breakage resulting from frequent handling, the advantages of Alba are still greater:

	Watts	Per foot	Per foot	Per foot
	lin. ft.	sq. ft.	sq. ft.	sq. ft.
Dayton, O....Alba globes.	8,710	0.173	0.092	
Indianapolis...Alba globes.	12,800	.211	.179	
Indianapolis...Crystal.*	12,100	.150	.076	
Toronto, Ont...Alba globes.	9,850	.235	.175	
Buffalo, N. Y...Alba globes.	5,680	.095	.093	

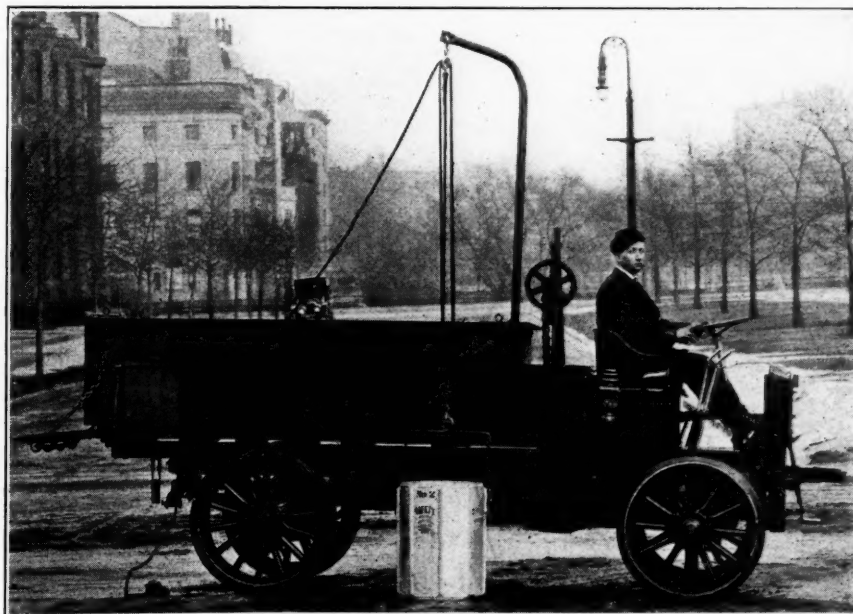
\*Roughed inside.

It must be remembered that the illumination considered in the above table is that produced on an area included between the two curb lines and does not account for illumination produced on any surface except the roadway. The readings were taken on a horizontal plane 36 inches above the street level.

### Motor Ash Wagon With Simple Loading Device

The Autocar Company, Ardmore, Pa., some time ago made an end-dumping ash wagon for the use of the Massachusetts Institute of Technology, Boston, Mass. The chassis carries a load of 3,000 pounds, which is probably about two cubic yards of ashes. In dumping the forward end of the wagon body is elevated by a chain belt operated by a hand crank wheel. The loading device, however, is perhaps of the most interest, as it shows how easy it is to lift a barrel of ashes over the necessarily somewhat high sides of a power dumping truck. It is simply a light crane with block and falls, an ash barrel of such weight that it can be dumped over the side of a wagon by men only with difficulty and even danger is an easy lift even for a very light crane.

The frame is built of pressed steel channels reinforced with hickory. The driver's seat is located over the motor so as to give a maximum body platform with a minimum wheel base. There is a speed governor limiting the speed; by this device the speed can



MOTOR ASH WAGON WITH LIGHT CRANE FOR LIFTING BARRELS.

be limited to any maximum up to 20 miles an hour.

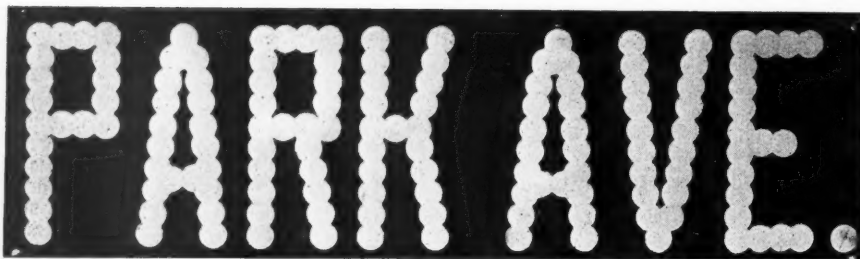
### Melilite Balls for Ornamental Street Illumination.

Gillinder & Sons, Inc., Philadelphia, Pa., manufacture Melilite balls for ornamental street illumination. The manufacturers take special pride in the handsome appearance of their globes, saying that a piece of polished marble is not more perfect. The Melilite globe shown in the illustration is a perfect sphere, the peer of any shape, composed of translucent glass. Its absorption of light is comparatively low, and the fact that the filament of a tungsten lamp is not visible tends to produce a ball of light of uniform intensity. The old roughed inside ball still retains its place in the thought of designers desiring a chaste and soft



MELILITE GLOBE.

illumination, but its high absorption makes it an expensive installation to maintain. The Melilite ball is a single piece sphere, hence there is no metal band to produce a shadow. Great care is taken in its manufacture, the makers claiming that as a sample of the glassmaker's art it is as nearly a perfect piece of glass as can be produced. The globes are made in various diameters and fitters and can be used as well on an arc lamp as with a tungsten unit.



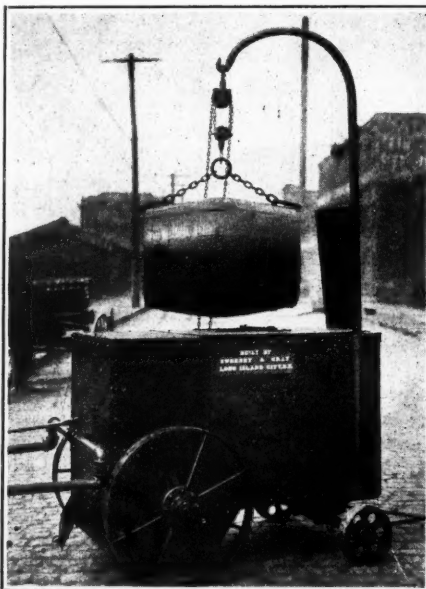
An Economical Street Sign Made by a Special Drilling Machine: Indestructible Sign Co., Columbus, O.

#### Steam Pipe Covering

A. Wyckoff & Son Co., Elmira, N. Y., have brought out a new steam pipe covering for underground or exposed steam pipe lines. The casing is composed of selected and carefully inspected staves of cypress. The 2-inch staves for the inner shell are drawn together by heavy tension into the form of a tube and firmly bound with galvanized steel wire, wound spirally with extra wrappings at each end. This is effected by bending over about one inch of the end of the wire, which is driven into the wood about two inches from the end of the casing. The spiral winding is then carried to the end of the casing back over itself and then to the other end of the casing, where it is again wrapped back over itself for about two inches and the final end of the wire securely fastened down by means of staples.

The next operation is placing four layers, four inches wide, of asphaltum packing on each end of the casing. This material is drawn around the casing as tightly as possible and fastened. It is finished by putting on the outside another casing of one-inch cypress jointed staves, which is bound with heavy galvanized steel wire, the same as the inner shell, thus making two casings of cypress wood, the inner shell two inches thick and the outer shell one inch thick, with a one-quarter-inch dead air space extending the entire length of the casing, between the shells, except the four inches on each end. This makes the combination of non-conductive materials which prevent the radiation of heat. Asphaltum packing will prevent drain water from getting in between the two shells of cypress. For underground use the covering is completely coated on the outside with Hydrolene-B and then rolled in sawdust, the sawdust acting as a binder, to prevent the coating from being scraped off in transit. When used over head, the coating is furnished painted on the outside with black asphaltum paint. The covering is made in lengths of from 4 to 12 feet. The lengths are connected by tenon and socket joint and have to be driven together, thus making a water-tight joint. This improved covering is made to slip on over the pipes while they are being connected up. It cannot be opened to apply on pipes already in place. For pipes conveying steam, where the pressure is

more than five pounds, to intensify heat radiation, keep a more uniformly high temperature in the line and also more efficiently protect the pipe, if the covering is lined with tin. Where the tin-lined covering is used, no matter how high the steam pressure, the extra



TAR KETTLE WITH CRANE.

thickness of the inner cypress shell will, it is said, positively prevent the danger of collapsing.

#### Portable Road Kettle for Tar or Asphalt

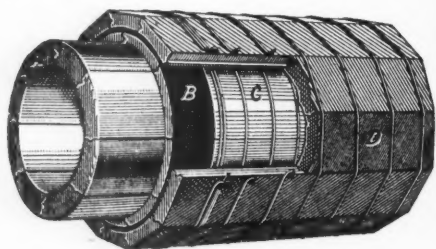
Sweeney & Gray Co., 81 Sixth street, Long Island City, New York, manufacture portable road kettles for tar, asphalt and road oils. The kettle illustrated was designed by George Holland, Acting Superintendent Bureau of Highways in the Borough of Queens,

New York. The kettles are made in a number of sizes. The standard size described here contains 150 gallons. The kettles are made of the best materials and workmanship, of extra heavy fire-box steel, double sheeted and heavy throughout. The rear wheels are 32 inches in diameter with 4-inch tires. The front wheel is 16 inches in diameter, also with 4-inch tires. The construction of the front wheels and the fifth wheel should be noted. It allows the kettle to turn in its own length. The firebox is provided with sectional grate bars, to burn wood, coke or coal. A large ashbox and the peculiar shape of the stack facilitate the draft. The manufacturers state that the kettle will heat a charge of tar in 15 minutes. The inside bowl is removable, riveted, hand calked, water tight; has hinged cover and a stop cock to draw off the liquid. To load the kettle a crane arrangement with chain block, with ample lifting capacity, has been provided.

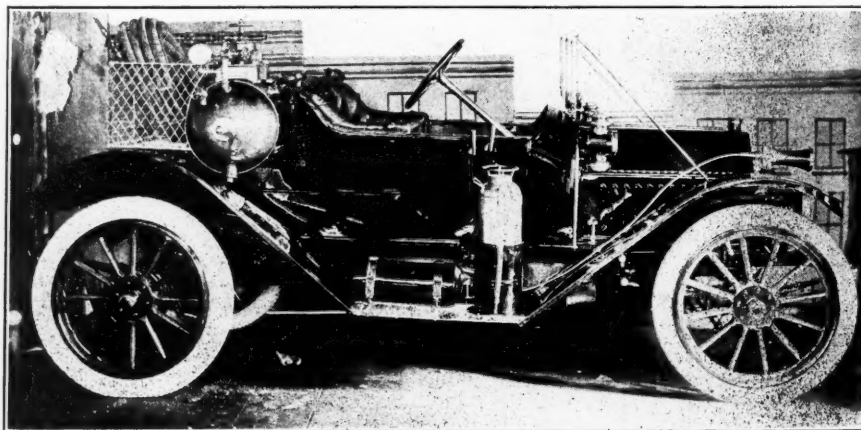
#### Small Auto Chemical or Chief's Car

The Michaley Auto Company, Stamford, Conn., have placed on the market an auto apparatus which is adapted for use as a chief's car or as a regular chemical engine. It is a well-known fact that many fires in suburban sections and small towns are now extinguished by the chief of the fire department, who is provided with an automobile and carries one or more portable chemical extinguishers. The Michaley Company, presumably having this knowledge in mind have designed a light car having besides the portable extinguishers a regular 35-gallon Holloway tank. The chief and one man with this equipment would be a small and effective department in themselves.

The specifications for the auto are as follows: Wheel base, 102 inches; weight, 2,650 lbs.; horse-power, 24 at 1,200 revolutions; motor, 3 3/4 x 3 3/4 cylinders; oil system, splash; ignition, Splitdorf magneto and battery; transmission, three-speed selective type; brakes, two sets on rear; internal expanding and external contracting; wheels, natural wood, hickory; 33 x 4, non-skid tires on rear; gasoline capacity, 200 miles; speed, 45 miles per hour; equipment, Holloway 35 gallon tank, 300 lbs. pressure; two 3-gallon chemical extinguishers, steel hose basket, 100 foot high pressure hose, Siren fire signal, top wind shield, Prestolite tank, speedometer, air-bottle; lap-cam self-cranker; colors, apparatus is finished in vermilion red with natural wood wheels.



WOODEN STEAM PIPE COVERING.



CHIEF'S CAR WITH CHEMICAL TANK OF STANDARD CAPACITY.



# INDUSTRIAL NEWS

**Cast Iron Pipe.**—Chicago—Prices are firmer, though there have been no large lettings. Quotations: 4-inch, \$27; 6 to 12-inch, \$25; 16-inch and up, \$24.50. Birmingham—Prices are firmer in sympathy with a very strong pig iron market. Inquiries are coming in at a good rate. Producers are more concerned about the supply of raw material than about new business, as there is a marked scarcity of pipe-making iron in the South. Quotations: 4 to 6-inch, \$23; 8 to 12-inch, \$22; over 12-inch, average, \$21. San Francisco—Business is fair in the aggregate, but is composed of small lots. New York—Private buying keeps up well and foundries report their orders running somewhat above their shipments. Public lettings are few and the quantities involved unimportant. Quotations: 6-inch, car load lots, \$22 to \$23.

**Lead.**—The lead situation is extremely quiet as a result of the big business which was done at the low prices that recently prevailed. The American Smelting & Refining Company's price is 4.20c., New York, and 4.12½c., St. Louis. Independents have been getting business at prices as high as 4.22½c., St. Louis, and 4.37½c., New York. Special brands of lead have sold at 4.50c.

**Peerless Rubber Goods.**—The Peerless Rubber Manufacturing Co., 16 Warren street, New York, have issued a carefully prepared and attractive catalogue of their line of mechanical rubber goods. The Peerless Company manufacture the "Rainbow" packing, a name perhaps better known in the trade than that of the company itself. It is of the red-colored sheet packing that most engineers pick out for their use when the selection is left to them. Peerless chemical fire engine hose is of high grade, possessing great strength and pliability. The constantly increasing use of chemical fire engines, mostly automobiles, nowadays, makes this hose an article of special interest to municipal authorities.

**Garbage Receptacle.**—The Detroit City Council has adopted a garbage ordinance which will require every householder to provide himself with a garbage receptacle inside his lot line made of brick, cement or galvanized iron. A cement and metal garbage receptacle which has met the requirements of the Detroit authorities was described in the Municipal Journal, March 21, page 462. It is manufactured by the Aldrich Manufacturing Company, 75 Pitcher street, Detroit, Mich.

**Steel Centering.**—F. M. Bowman, secretary; Wayne Rawley, manager structural works, and A. Bovard, engineer of the Ritter-Conley Manufacturing Company, of Pittsburgh, Pa., have resigned these positions and are organizing a large manufacturing concern in conjunction with the Blaw Steel Centering Company.

**Sewer Inlets.**—The Burch Plow Works Company, Crestline, O., manufacturers of iron inlets and other specialties, has bought property adjoining its present plant and will make extensions. A new addition will be built to its molding department. J. I. Morrow is secretary.

**A Gigantic Steam Turbine.**—The Brooklyn Rapid Transit Company has placed an order with the Westinghouse Machine Company, Pittsburgh, Pa., for a gigantic steam turbine. It is to be capable of delivering a continuous output of 20,000 kw., corresponding to 30,000 horsepower, and will be able to carry a load of 35,000 horsepower as a maximum. In type it will be of the Westinghouse double flow construction, and in general outline will resemble the 10,000 kw. turbine built for the City Electric Company, San Francisco, and which attracted the world-wide attention of engineers as having developed the highest thermo-dynamic efficiency on record, either in this country or abroad.

**Traction Company Consolidation.**—Announcement is made by the Smith-Tevis-Hanford Co., of New York, of the incorporation of the San Francisco Oakland Terminal Railways, on March 21, with a capital of \$28,000,000. Into this company has been consolidated and absorbed the Oakland Traction Co., San Francisco, Oakland & San Jose Consolidated Railway, Pacific Terminal Co., East Shore & Suburban Railway Co., California Railway Sacramento Shore Line, and San Jose Short Line. E. L. Rhett, vice-president of the Smith-Tevis-Hanford Co., who has recently returned from a tour of inspection of the properties, says there is a revival of business in California in general and San Francisco in particular. He adds that not in years has there been such widespread interest in California property as is now shown throughout the country.

**Reinforcing Bars.**—The Rail Street Bar Manufacturers' Association has been organized at Chicago by representatives of steel mills whose product is rolled from rails into bars, shapes and special sections, and which are large producers of bars for reinforcing concrete. The purpose of the association is to promote the publicity and use of their product, with particular reference to reinforcing bars, and it is expected to accomplish material results by employing educational methods regarding the manufacture and use of such bars. President, Edward E. Hughes, Franklin, Pa.; vice-president, J. G. Joseph, Buffalo, N. Y.; secretary, Arthur S. Hook, Chicago.

**Ice Machine.**—The officials of the General Electric Co. who recently inspected the machines at the Fort Wayne Electric Works told the local heads of the company that when the machines became better known the company expects to turn out 5,000 a year. The Fort Wayne Electric Works is at present equipped to turn out a few of the ice machines every month. The announcement that 5,000 are to be manufactured astonished the officials.

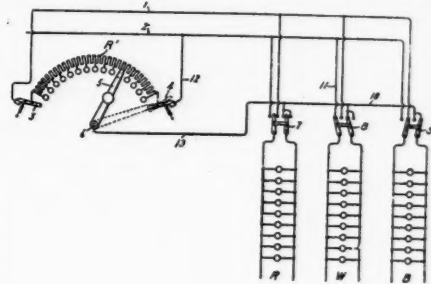
**Street Lighting Standards.**—The George Cutter Company, South Bend, Ind., manufacturer of electrical supplies and specialties, including ornamental street lighting standards, will erect an additional building for manufacturing purposes.

**Cement Pavement.**—The Rudolph S. Blome Co., of Chicago, announces its removal to the City Hall Square building, 127 North Clark street.

## PATENT CLAIMS

**1,019,422. CONTROLLING DEVICE FOR LIGHTING-CIRCUITS.** Arnold E. Button, Schenectady, N. Y., assignor to General Electric Co., a Corporation of New York. Serial No. 407,133.

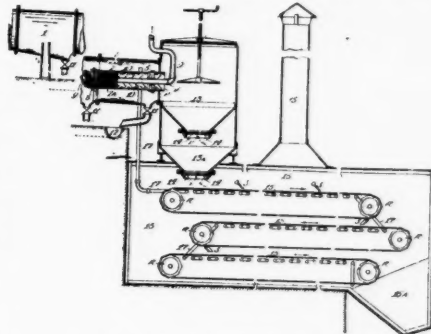
The combination with a main electric circuit having a plurality of branches, and translating devices connected in said



branches, of a rheostat connected across the main circuit, and connections whereby resistance is included in one of said branches and simultaneously excluded from another branch by a single movement of the controlling member of the rheostat.

**1,019,933. TREATMENT OF SEWAGE.** Joe Smith Waddington, Bradford, England. Serial No. 644,968.

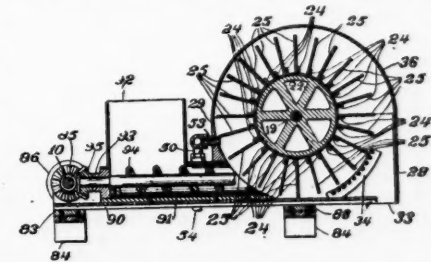
In a liquid extracting apparatus an inclined casing encircling a revolving cage



lined with cloth fabric, combined with a steam pipe having a series of jets adapted to impinge on the mud in said cage, substantially as described.

**1,020,640. ROAD-BINDER-MIXING MACHINE.** William F. Davis, Kansas City, Kan. Serial No. 549,815.

In a road-binder-mixing machine, the combination with a frame having ground engaging supports and provided with journal bearings, of a rotary scraper journaled in said bearings and constructed with a periphery presenting plural scraping edges, said scraper being arranged to scrape road material from a conveyor,



a conveyor arranged approximately transverse to the axis of said scraper and located lower than the top of said scraper and constructed to force road materials within the sweep of said scraping edges, and binder serving devices arranged to discharge binder in close proximity to the scraper whereby the binder and the scrapings are at once associated and discharged from the scraper.

**1,020,672. CONDUIT.** James S. Wilson, Chelsea, Mass. Serial No. 535,109.

A conduit and a longitudinally extending member located within the conduit, and having a sinuous form whereby it engages the wall of the conduit.

## THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

### BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
Michigan	Grand Rapids	Apr. 11, 8 p.m.	Pavg. with brick.	E. H. Christ, Pres. Bd. Pub. Wks.
Ohio	Pomeroy	Apr. 13, noon	Imp. several streets.	D. W. Hennessy, Vil. Clk.
Pennsylvania	McKees Rocks	Apr. 15, 8 p.m.	Excav. 2,500 cu. yds.	G. H. McGinness, Boro. Engr.
Ohio	Delaware	Apr. 15, 1 p.m.	Constrn. 4 miles road.	W. F. Whittier, County Surv.
Ohio	Murray	Apr. 15, noon	Pavg. with brick.	Morris Albaugh, Vil. Clk.
Minnesota	Minneapolis	Apr. 15, 11 a.m.	Macad. road.	A. P. Erickson, County Aud.
Illinois	Moline	Apr. 13	Constrn. 9,000 yds. brick & 20,000 asph. 21,000 ft. curb & gut.	Board Local Imp.
Virginia	Lynchburg	Apr. 13, noon	Constrn. 21,000 lin. ft. concrete curb and 37,000 sq. yds. bit. macadam pavement.	H. L. Shaner, City Engr.
Georgia	Bainbridge	Apr. 15, 7.30 p.m.	Constrn. 23,000 yds. brick, wood, bitulithic or asphalt or granitoid pav't.	J. W. Callahan, Mayor.
North Carolina	Murphy	Apr. 15, 2 p.m.	Grading 67,000 cu. yds. road, furn. 1,500 lin. ft. vit. pipe.	G. W. Scott, Engr.
Georgia	Brunswick	Apr. 15, 8 p.m.	Grading and pavg. with vit. brick 11,000 sq. yds. and 17,000 lin. ft. of granite curb.	J. L. Zachry, Cy. Eng. & Dir. P. Wks. County Comm.
Texas	Victoria	Apr. 15, 10 a.m.	Constrn. road work; cost, \$200,000.	J. D. Benefiel, County Aud.
Indiana	Anderson	Apr. 15	Constrn. 14 gravel roads.	John Coon, Comr. Sts. & Parks.
W. Virginia	Huntington	Apr. 15, 1.30 p.m.	Pavg. number of streets and alleys with vit. paving brick.	G. B. Findley, Boro. Engr.
Pennsylvania	Freeport	Apr. 15, 7.30 p.m.	Constrn. 2,800 sq. yds. vit. pav't, gradg. & curbg. 2 streets.	Board of Bond and Trustees.
Florida	Lakeland	Apr. 15	Laying pavement.	T. D. Miller, Village Clk.
Ohio	Jefferson	Apr. 15	Pavg. with tar concrete several streets.	A. B. Maupin, City Engr.
West Virginia	Huntington	Apr. 15, 1.30 p.m.	Pavg. alleys with brick.	State Highway Comm.
New York	Albany	Apr. 15, 17 and 19	Constrn. 358 miles of roads; cost, \$5,000,000.	C. W. Coulter, Boro. Sec'y.
Pennsylvania	Brownsville	Apr. 15, 7 p.m.	Imp. a number of streets.	Township Comm.
New Jersey	Long Beach	Apr. 15	Constrn. 6½ miles gravel road.	W. H. Luster, City Surv.
New Jersey	Elizabeth	Apr. 15	Constrn. 10,000 sq. yds. block pav't.	Jacob Wells, Chm. Comm.
New Jersey	Sea Isle City	Apr. 15	Constrn. macad. roadway and cement gutters; cost \$20,000.	J. P. Pool, County Judge.
Texas	Victoria	Apr. 15, 10 a.m.	Constrn. county roads.	W. C. Leye, City Aud.
South Dakota	Sioux Falls	Apr. 15, 9 a.m.	Constrn. 16,600 sq. ft. paving.	J. B. Wakefield, Pres. Bd. Pub. Wks.
Kentucky	Louisville	Apr. 15, 2 p.m.	Pavg. with asphalt, with vit. brick gutters, 7 streets.	J. L. Zachry, Dir. Pub. Wks.
Georgia	Brunswick	Apr. 15, 8 p.m.	Pavg. with vit. brick.	W. H. Strong, Mayor.
Alabama	Brewton	Apr. 15	Constrn. 2½ miles of concrete sidewalk and 2 miles brick or cement curb.	J. B. Denniel, Aud.
Indiana	Anderson	Apr. 15, 2 p.m.	Constrn. 10 gravel roads.	County Commrs., Victoria County.
Texas	Houston	Apr. 15, 10 a.m.	Constrn. gravel road, Dist. No. 2.	Mayor.
Louisiana	Crowley	Apr. 16	Constrn. street vit. brick, creosoted block, bit. asphalt or cement.	F. G. Ward, Comm. Pub. Wks.
New York	Buffalo	Apr. 16	Pavg. a number of streets.	C. R. Gordon, City Clk.
Arkansas	Helena	Apr. 17, 2 p.m.	Constrn. 10,000 sq. yds. pav't creosoted wood block, sheet asphalt and bit.	C. L. Riley, County Aud.
Ohio	Newark	Apr. 17, noon	Constrn. macadam road.	John F. Goldenbogen, County Clk.
Ohio	Cleveland	Apr. 17, 11 a.m.	Imp. North Woodland road No. 2 & Center Ridge rd. No. 2.	C. D. Walker, Mayor.
Kansas	Atchison	Apr. 18, 5 p.m.	Pavg. 10,500 yds. with concrete or brick.	C. B. Stover, Pres. Park. Comm.
New York	Brooklyn	Apr. 18, 3 p.m.	Furn. 80,000 gal. asphalt binder.	J. R. Marker, Highway Comm.
Ohio	Steubenville	Apr. 18, 1 p.m.	Pavg. 2,67 miles with water-bound macadam.	R. J. Shields, Clk. Bd. Pub. Wks.
New York	Poughkeepsie	Apr. 18, 4 p.m.	Constrn. 11,000 sq. yds. paving.	City Council.
Kentucky	Georgetown	Apr. 19	Pavg. with brick or asphaltic concrete several streets.	W. S. Canning, City Engr.
Kentucky	Jackson	Apr. 20	Constrn. 13,000 yds. macadam or telford road.	L. S. Pope, City Sec'y.
Texas	Sweetwater	Apr. 22	Constrn. 66,000 sq. yds. water bound macadam, 4,000 sq. yds. asphalt macad. street pav't.	C. L. Bower, County Clk.
Ohio	Akron	Apr. 23, 11 a.m.	Pavg. Malfeld avenue.	C. H. Brown, Aud.
Indiana	Ft. Wayne	Apr. 23	Furn. crushed stone for road.	John F. Goldenbogen, Clk.
Ohio	Cleveland	Apr. 24, 11 a.m.	Improving Green road.	F. D. Walpole, Recorder.
Tennessee	McKenzie	Apr. 24, 2 p.m.	Grading and graveling streets.	O. T. Jones, City Clk.
Kansas	Pittsburgh	Apr. 24, 8 p.m.	Constrn. 4,500 yds. brick paving with asphalt filler.	G. L. Farnsworth, City Engr.
Ohio	Akron	Apr. 25 (about)	Constrn. brick road.	J. R. Marker, Highway Comm.
Ohio	Painesville	Apr. 25, 10 a.m.	Pavg. 1.41 miles with bituminated concrete.	W. D. Barkhuff, City Engr.
Washington	Everett	Apr. 25	Constrn. 1 mile asphalt pav't; cost, \$67,000.	J. R. Marker, Highway Comm.
Ohio	Youngstown	Apr. 26, 10 a.m.	Pavg. 2.56 miles with water-bound macad. (2 contracts).	Board Public Works.
Missouri	St. Louis	Apr. 26	Pavg. with asphalt, brick and wood; cost, \$185,000.	J. E. Schwaab, City Engr.
Illinois	Alton	Apr. 27	Pavg. Elm street.	W. W. Bean, Chm. Bd. Local Imp.
Illinois	Streator	Apr. 30	Constrn. pav't.	J. C. Moore, County Aud.
Illinois	Ottawa	Apr. 30	Pavg. with brick on concrete; cost, \$800,000.	W. B. M. Henry, Mayor; Aetna Eng. Bureau, Chicago.
Illinois	Rochelle	Apr. 30 (about)	Pavg. with brick on concrete base; cost, \$85,000.	Major A. W. Kimball.
Wyoming	Ft. D. A. Russell	May 1, 10 a.m.	Repair, roads.	J. W. Harbou, County Aud.
Indiana	South Bend	May 1	Constrn. 3 miles crushed granite paving.	City Engr.
Arkansas	Ft. Smith	May 1, noon	Pavg. Garrison avenue.	E. A. Staggs, County Aud.
Indiana	Brazil	May 7	Imp. highway, 15,800 ft. long.	J. T. Scott, County Aud.
Indiana	Vincennes	May 7, 2 p.m.	Constrn. 22,000 ft. gravel roads (3 contracts).	H. A. Naberhuis, City Engr.
Michigan	Holland	May 15	Constrn. 1½ miles bit. paving; cost, \$45,000.	G. C. Ward, Engr., Painesville.
Ohio	Madison	May 15 (about)	Constrn. 2 miles macad. road.	R. F. Harbent, Dir. Pub. Serv.
Ohio	Canton	June 1	Pavg. Broadway with brick block.	
<b>SEWERAGE</b>				
Pennsylvania	Warren	Apr. 12, 2 p.m.	Constrn. 8,700 ft. 8 to 12-in. clay pipe sewers and 3,850 ft. c. i. pipe.	S. W. Waters, Sec'y Trus.; Albright & Mebus, Engrs., Philadelphia.
Illinois	Moline	Apr. 13, 11 a.m.	Constrn. sewers and water mains.	M. C. Carlson, Pres. Bd., Local Imp.
Iowa	Burlington	Apr. 13, 4 p.m.	Furn. sewer pipe.	Robt. Kroppach, City Clk.
New Jersey	Elizabeth	Apr. 15, 8.30 p.m.	Constrn. 215 ft. 10-in. pipe, etc.	W. P. Neafsey, St. Comm.
Dist. Columbia	Washington	Apr. 15, 2 p.m.	Constrn. sewers.	C. H. Rudolph, Chm. Dist. Comm.
Pennsylvania	Warren	Apr. 15	Constrn. sewage disposal plant for hospital.	Supt. Hospital.
Minnesota	Mankato	Apr. 15	Constrn. 9,600 ft. 8 to 18-in. sanitary sewers.	H. F. Bloomquist, City Engr.
Florida	Lakeland	Apr. 15	Constrn. sewers.	Board of Bond and Trustees.
Ohio	Lakewood	Apr. 15, noon	Constrn. several sewers.	J. W. Chrisford, Dir. Pub. Serv.
W. Virginia	Kingwood	Apr. 15 (about)	Constrn. sewer system; cost, \$10,000.	V. B. Dunn, Mayor; J. K. Monroe, Engr.
Ohio	Canton	Apr. 15, 10 a.m.	Furn. culvert pipe.	J. H. McConell, County Aud.
Ohio	Cambridge	Apr. 15, noon	Constrn. 5,700 ft. 8 to 10-in. clay pipe sewers.	K. M. Cosgrove, City Engr.



## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ohio.....	Hubbard.....	Apr. 15.....	Constrn. 6 miles of sewers.....	City Clerk.
New Jersey...	Sea Isle City.....	Apr. 15.....	Constrn. sewage treatment tank and intercepting sewers.....	Jacob Wells, Chm. Comm.
Oklahoma.....	Muskogee.....	Apr. 16, 10 a.m.....	Constrn. brick and tile sewer.....	Chas. Wheeler, Jr., City Clk.
Florida.....	Ft. Pierce.....	Apr. 16, 7 p.m.....	Constrn. 7 miles 6 to 12-in. sewer pipe, etc.....	Co. Comm.; D. D. & C. M. Rogers, Engrs.
Maryland.....	Baltimore.....	Apr. 17.....	Constrn. sanitary lateral sewers, Dist. No. 18 & No. 40D.....	C. W. Hendricks, Ch. Engr., 904 American Bldg.
New York.....	Brooklyn.....	Apr. 17, 11 a.m.....	Constrn. brick and pipe sewers, 6 streets.....	A. E. Steers, Boro. Pres.
Canada.....	Sudbury, Ont.....	Apr. 17.....	Constrn. 8,555 ft. 15 to 20-in. sanitary sewers.....	George Elliott, Town Clk.; Chipman & Powers, Engrs., Toronto.
Ohio.....	Niles.....	Apr. 17.....	Constrn. 9,000 ft. 6 to 12-in. sewers.....	F. C. Brewer, City Engr.
Iowa.....	Dubuque.....	Apr. 18, 8 p.m.....	Constrn. 5,100 ft. 8-in. clay pipe sewer.....	O. P. Geiger, City Recorder.
Minnesota.....	Tracy.....	Apr. 18.....	Constrn. septic tank and sludge bed.....	L. J. Fitch, City Recorder.
Nebraska.....	Ft. Omaha.....	Apr. 18, 11 a.m.....	Constrn. reinforced concrete sewers.....	J. L. Clem, C. M. O.
Massachusetts.....	Fitchburg.....	Apr. 18, 3 p.m.....	Constrn. Sec. 1 main intersecting sewer.....	D. A. Hartwell, Ch. Engr.
Kansas.....	Atchison.....	Apr. 18, 5 p.m.....	Constrn. 23,000 ft. tile sewers.....	C. D. Walker, Mayor.
Pennsylvania.....	West Hazleton.....	Apr. 19, 7 p.m.....	Constrn. 763 ft. wooden flume.....	C. H. Moore, Boro. Engr.
Illinois.....	Hamilton.....	Apr. 19.....	Constrn. 19,000 ft. of 8 to 12-in. pipe sewer, etc.....	H. B. Kinkade, Sec'y Bd. Local Imp. Boro. Council.
Pennsylvania.....	Hazleton.....	Apr. 19.....	Constrn. 763 ft. flume.....	D. Thompson, City Clk.
Michigan.....	Ludington.....	Apr. 20, 1.30 p.m.....	Constrn. 4,000 ft. sewer.....	W. B. McHenry, Mayor.
Illinois.....	Rochelle.....	Apr. 30.....	Constrn. sewer system.....	S. H. Andrews, City Clk.; J. M. Crom, City Engr.
Washington.....	Cashmere.....	Apr. 22.....	Constrn. sewers and sidewalks.....	B. F. Roess, City Engr.
Pennsylvania.....	Oil City.....	Apr. 22.....	Constrn. 4,000 ft. 6 to 12-in. clay pipe sewers.....	Common Council.
New Jersey.....	Rahway.....	Apr. 23, 8 p.m.....	Constrn. 3,500 ft. 6 to 12-in. vit. pipe.....	F. A. Woodward, City Clk.
Ohio.....	Andover.....	Apr. 24.....	Constrn. 5 miles 8 to 12-in. sewers.....	
Louisiana.....	New Orleans.....	Apr. 25, noon.....	Constrn. concrete lined and covered sewer, 7,310 lin. ft. terra cotta pipe line, 26 to 6-in. diameter.....	F. S. Shields, Sec'y Sew. & Water Bd.
Virginia.....	Roanoke.....	Apr. 30, noon.....	Constrn. sewer.....	W. L. Craft, City Clk.
New York.....	Newark.....	Apr. 30.....	Constrn. 100,000 ft. 6 to 18-in. clay pipe sewers & disp. plant.....	J. E. Wiser, Clk.
Illinois.....	Rochelle.....	Apr. 30.....	Constrn. sewer system.....	W. B. McHenry, Mayor.
California.....	Covina.....	May 1.....	Constrn. sewer system; cost, \$45,000.....	Town Clerk and F. G. Dessery, Eng., Los Angeles, Cal.
Illinois.....	Altamont.....	May 1.....	Constrn. sewer system.....	City Council.
California.....	Venice.....	May 1.....	Constrn. sewers; cost, \$15,000.....	G. F. Lewin, City Engr.
Ohio.....	Bellefontaine.....	May 1.....	Constrn. sludge bed, furn. pump.....	F. D. Outland, City Aud.
New Jersey.....	Longport.....	May 9.....	Constrn. sewer system; cost, \$10,000.....	Boro. Council.
Ohio.....	Canton.....	June 15.....	Extend. storm sewer, Liberty street.....	P. H. Weber, City Engr.

## WATER SUPPLY

Oklahoma.....	Holdenville.....	Apr. 13.....	Extending water system.....	S. Levan, City Clk.; Goodwin & Harper, Engrs., Kansas City.
Illinois.....	Chicago.....	Apr. 14.....	Imp. pumping plant.....	L. E. McGann, Comm. Pub. Wks.
West Virginia.....	Kingwood.....	Apr. 15.....	Constrn. water works; cost, \$15,000.....	A. M. Quick, Engr., Baltimore, Md.
New Jersey.....	South Orange.....	Apr. 15.....	Furn. 2 air compressors and 2 pumps.....	Village Trustees.
New Jersey.....	South Orange.....	Apr. 15, 8 p.m.....	Furn. two 800-gal. per min. capacity pump. engs., 2 air comp. Consult. Engr.	M. Fitzsimmons, Vil. Clk.; J. J. Boyo, Consult. Engr.
New York.....	Yonkers.....	Apr. 15, 3.30 p.m.....	Constrn. 2 filters, clear water basin, pipes, etc.....	J. V. Mahony, Sec'y Bd. Contract.
Iowa.....	Indianola.....	Apr. 15, 7.30 p.m.....	Furn. water works supplies.....	J. W. Closum, Mayor.
Pennsylvania.....	Shippensburg.....	Apr. 15.....	Repair and lining reservoir.....	P. B. Noftsker, Boro. Sec'y.
Massachusetts.....	New Bedford.....	Apr. 16, 3 p.m.....	Furn. c. i. pipe and gate valves and pig lead.....	Water Board.
Texas.....	Brownwood.....	Apr. 16, 8 p.m.....	Constrn. earthen reservoir.....	Duke Andrews, City Sec'y.
Oklahoma.....	Muskogee.....	Apr. 16, 10 a.m.....	Furn. gate valves.....	Chas. Wheeler, Jr., City Clk.
Illinois.....	Berwyn.....	Apr. 16.....	Furn. deep well pump.....	City Clerk.
Nebraska.....	Louisville.....	Apr. 16.....	Constrn. waterworks; cost, \$16,000.....	C. A. Richey, Chm.
Washington.....	Brewster.....	Apr. 16.....	Constrn. 6,000 ft. mains, well, pump and reservoir.....	A. J. O'Connor, City Clk.
Florida.....	Pensacola.....	Apr. 16, noon.....	Constrn. reinforced concrete reservoir.....	D. Kugelman, Chm. Comm.
Nebraska.....	Rosalie.....	Apr. 16.....	Constrn. water works; cost, \$8,700.....	City Clerk; Grant & Letton, Engrs., Lincoln, Neb.
Florida.....	Ft. Pierce.....	Apr. 16, 7 p.m.....	Constrn. water works, 500 tons 6 to 10-in. water pipe, 2 pumps, 75,000-gal. tank, 100,000-gal. reservoir.....	Co. Comm.; D. D. & C. M. Rogers, Engrs.
Florida.....	Pensacola.....	April 16, noon.....	Constrn. reinforced concrete reservoir.....	D. Kugelman, Chair. Committee.
Illinois.....	Fairbury.....	Apr. 17.....	Constrn. steel water tank.....	T. D. Karnes, City Clk.
New York.....	Geneva.....	Apr. 18.....	Constrn. 730 ft. 30-in. c. i. intake pipe.....	Bd. of Pub. Wks.; Wm. S. Johnson, Engr., Boston, Mass.
Wisconsin.....	Independence.....	Apr. 19.....	Constrn. wells, pump house, motor-driven pump and discharge line.....	Jacob Jackson, Vil. Clk.
Illinois.....	Hamilton.....	Apr. 19.....	Constrn. 25,000 ft. 6 to 10-in. pipe.....	H. B. Kinkade, Sec'y Bd. Local Imp.
Wisconsin.....	Independence.....	Apr. 19, 8 p.m.....	Constrn. water works extension, motor-driven pump, etc.....	Jacob Jackson, Clk.; W. E. Miller, Engr., Madison.
Illinois.....	Hamilton.....	Apr. 20.....	Install. hydrants, pumping plant, steel tank.....	H. B. Kinkade, Sec'y Bd. Local Imp.
Wisconsin.....	Watertown.....	Apr. 22, 8 p.m.....	Furn. 700-gal. centrifugal pump and motor.....	W. F. Voss, Sec'y Comm.; W. G. Kirchoffer, Engr., Madison.
Illinois.....	Normal.....	Apr. 24, 4.30 p.m.....	Constrn. well, pumping machinery, reservoir, building.....	T. H. Keys, Clk.
Ohio.....	Canton.....	Apr. 24, noon.....	Furn. meters for water works.....	R. F. Harvert, Dir. Pub. Serv.
Pennsylvania.....	Hanover.....	Apr. 24, 7 p.m.....	Furn. 50 water plugs and supplying water.....	F. C. Rowe, Sec'y Comm.
Georgia.....	Ft. Screven.....	Apr. 25, 11 a.m.....	Constrn. steel tank.....	Constrn. Quartermaster.
Illinois.....	Ashton.....	Apr. 25, 1 p.m.....	Constrn. water works, incl. well, sta'n, reser., hydrants, etc.....	S. T. Zeller, Jr., Pres.
Iowa.....	Burlington.....	May 1.....	Constrn. concrete settling tank.....	Citizens Water Co.
Illinois.....	Altamont.....	May 1.....	Constrn. water works and furn. hydrants, valves, c. i. pipe, pumps, tower and tank.....	City Council.
Kansas.....	Burr Oak.....	May 1 (about).....	Constrn. water system; estimated cost, \$25,000.....	J. E. Hawley, Mayor; Goodwin & Hayes, Consult. Engrs., Kansas City, Mo.
Oregon.....	Monmouth.....	May 4, 3 p.m.....	Constrn. water system; estimated cost, \$1,500 to \$2,000.....	I. E. Stitt, City Clk.; L. C. Kelsey, Consult. Engr., Box 305, Portland, Ore.
Florida.....	Titusville.....	May 20.....	Constrn. water works.....	Geo. M. Robbins, Chm. Bond & Trus.
Colorado.....	Aguilar.....	June 1 (about).....	Constrn. water works; cost, \$70,000.....	City Clerk.

## LIGHTING AND POWER

Iowa.....	Indianola.....	Apr. 15, 7.30 p.m.....	Furn. supplies for lighting plant.....	J. W. Closum, Mayor.
Florida.....	Ft. Pierce.....	Apr. 16, 7 p.m.....	Constrn. electric lights.....	Common Council; D. D. & C. M. Rogers, Engrs.
North Carolina.....	Whitakers.....	Apr. 17, 8 p.m.....	Constrn. electric light plant.....	C. E. Fairbanks, Engr., Amer. Nat. Bank Bldg., Richmond, Va.
Ohio.....	Fremont.....	June 18.....	Light. streets for 10 years.....	Service Director Snider.
Canada.....	Penticton, B. C.....	Apr. 18.....	Bldg. power plant.....	F. H. Latimer, City Engr.
Michigan.....	Ann Arbor.....	Apr. 22.....	Constrn. power house.....	G. S. Williams, Consult. Engr.
Mississippi.....	Yazoo City.....	Apr. 27, 3 p.m.....	Furn. electrical machinery and apparatus.....	Public Service Commission.
Dist. Columbia.....	Washington.....	Apr. 27, 11 a.m.....	Furn. two 100-kw. motor generator sets.....	Navy Department.
California.....	Roseville.....	Apr. 29.....	Constrn. new light. plant or substation and supplying lamps.....	U. S. Marshall, City Engr.
Kansas.....	Topeka.....	May 7, 2 p.m.....	Furn. 50-h.p. engine and generator.....	H. C. Bowman, Chm. State Bd. Con.
Pennsylvania.....	Newcastle.....	May 13, noon.....	Light. streets with arc and incandescent lights.....	F. M. Hartman, City Clk.

## FIRE EQUIPMENT

Illinois.....	Chicago.....	Apr. 12, 10 a.m.....	Furn. 40,000 ft. 2½-in., 5,000 ft. 3½-in., 5,600 ft. 1½-in. fire hose.....	C. F. Seyferlich, Fire Marshal.
Illinois.....	Chicago.....	Apr. 13, 11 a.m.....	Furn. 80 alarm boxes.....	Ray Palmer, City Electrician.
Ohio.....	East Cleveland.....	Apr. 13, noon.....	Furn. 800 ft. 3½-in. fire hose.....	G. T. Rowe, Dir. Pub. Safety.
Pennsylvania.....	Scranton.....	Apr. 15, 10 a.m.....	Furn. 1,200 ft. 2½-in. fire hose.....	W. G. O'Malley, Dir. Pub. Safety.

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Dist. Columbia	Washington.....	Apr. 15, 2 p.m.....	Furn. 1 gasoline motor car.....	C. H. Rudolph, Pres. Comm.
Pennsylvania	Meadville.....	Apr. 17.....	Furn. triple combination auto fire truck.....	F. C. Kiebert, City Clk.
Rhode Island	Woonsocket.....	Apr. 25, 4 p.m.....	Bldg. fire station.....	F. X. Berard, Chm. Comm.
Montana	Shelby.....	May 1.....	Furn. 4,000 ft. of hose.....	City Clerk.
Michigan	St. Joseph.....	June 1.....	Furn. 500 ft. fire hose.....	H. G. Hughson, Chief Dept.
<b>BRIDGES</b>				
Massachusetts	North Hampton.....	Apr. 13, noon.....	Remov. concrete arches and repairing bridge.....	J. L. Fowler, Supt. Streets.
West Virginia	Grafton.....	Apr. 15, noon.....	Constrn. concrete bridge.....	M. A. Bieler, Chm. Street Comm.
Indiana	Anderson.....	Apr. 15, 10 a.m.....	Constrn. concrete bridges.....	J. B. Bennet, County Aud.
Ohio	Circleville.....	Apr. 15.....	Constrn. sub. and superstructure of bridge.....	J. A. Dodd, County Aud.
Ohio	Mt. Gilead.....	Apr. 15, 11 a.m.....	Constrn. concrete arch bridge.....	County Comm.
Illinois	Maywood.....	Apr. 15 (about).....	Constrn. concrete bridge; cost, \$35,000.....	Westcott & Konneberg, Engrs., Chicago.
Pennsylvania	Monessen.....	Apr. 15.....	Constrn. reinforced concrete viaduct.....	Boro. Secretary; Chester & Fleming, Engrs., Pittsburgh.
North Dakota	Grand Forks.....	Apr. 16.....	Constrn. bridges for year.....	Hans Anderson, County Aud.
Ohio	Hamilton.....	Apr. 17.....	Constrn. bridge; cost, \$9,500.....	County Comm.
Ohio	Cleveland.....	Apr. 17, 11 a.m.....	Constrn. bridge.....	J. F. Goldenbogen, County Clk.
New Jersey	Paterson.....	Apr. 19.....	Furn. triple comb. auto engine.....	Police and Fire Comm.
Ohio	Cleveland.....	Apr. 21, 11 a.m.....	Constrn. concrete arch bridge.....	J. F. Goldenbogen, County Clk.
Ohio	Niles.....	Apr. 22, 1 p.m.....	Constrn. steel and concrete bridge.....	F. T. Stone, County Aud.
Nebraska	Spring View.....	Apr. 23.....	Constrn. two bridges across river.....	John Scheie, County Clk.
Delaware	Wilmington.....	Apr. 23, noon.....	Constrn. sub. and superstructure of movable bridge.....	S. J. Dennison, Chm. Comm.
Illinois	North Chicago.....	Apr. 23, 10 a.m.....	Constrn. concrete foot bridge.....	Navy Department.
Illinois	Chicago.....	Apr. 24, 11 a.m.....	Constrn. substructure of bridge.....	L. E. McGann, Comm. Pub. Wks.
Ohio	Cleveland.....	Apr. 24, 11 a.m.....	Constrn. concrete bridge.....	J. F. Goldenbogen, County Clk.
North Dakota	Grand Forks.....	Apr. 26.....	Constrn. bridges.....	Hans Anderson, County Aud.
Ohio	Cleveland.....	Apr. 27, 11 a.m.....	Constrn. foundation for two piers.....	J. F. Goldenbogen, Clk. Co. Comm.
Nebraska	Arlington.....	Apr. 30.....	Constrn. reinforced concrete arch bridge.....	O. T. Anderson, County Clk.
Iowa	Creston.....	May 6, 4 p.m.....	Constrn. concrete bridge.....	T. S. Delay, County Surv.
Florida	Tampa.....	May 7.....	Constrn. Lafayette street bridge.....	Board Public Works.
<b>MISCELLANEOUS</b>				
Idaho	Sandpoint.....	Apr. 11, 10 a.m.....	Furn. carload culvert pipe.....	R. S. McCrea, Clk. Bd. Comm.
Minnesota	Duluth.....	Apr. 12, 10 a.m.....	Sprinkling streets.....	O. G. Olson, Pres. Bd. Pub. Wks.
South Carolina	Florence.....	Apr. 12, noon.....	Furn. street sweeper.....	H. K. Gilbert, Mayor.
Oregon	Portland.....	Apr. 13, 10 a.m.....	Furn. 5-ton auto truck.....	F. S. Fields, County Clk.
Dist. Columbia	Washington.....	Apr. 13, 11 a.m.....	Furn. garbage crematories at several stations.....	Navy Department.
Kentucky	Newport.....	Apr. 15, 11 a.m.....	Constrn. 40-ton garbage incinerating plant.....	J. B. Morledge, Comm. Pub. Wks.
Georgia	Atlanta.....	Apr. 15.....	Constrn. 800-ton incinerator.....	Courtland Winn, Mayor.
New Jersey	Elizabeth.....	Apr. 15, 8.30 p.m.....	Furn. police signal system.....	J. F. Kenah, City Clk.
Pennsylvania	Philadelphia.....	Apr. 15.....	Furn. conc. mixer, hypochlorite of lime & oxyacetylene outfit.....	L. M. Cook, Dir. Pub. Wks.
New Jersey	Elizabeth.....	Apr. 15, 8.30 p.m.....	Furn. police signal system.....	J. S. Kenah, City Clk.
Ohio	Cleveland.....	Apr. 16, noon.....	Constrn. additions to bath house.....	W. J. Springborn, Dir. Pub. Serv.
Pennsylvania	Coal Township.....	Apr. 16, 7 p.m.....	Furn. stone crusher.....	Jos. Jones, Pres. Comm.
Pennsylvania	Philadelphia.....	Apr. 16, 2 p.m.....	Furn. uniforms for park guards.....	J. T. Vodges, Chief Engr.
Ohio	Cincinnati.....	Apr. 16, noon.....	Constrn. water supply, sewerage system electrical equipment, etc., for hospital.....	H. T. Hunt, Pres. Comm.
Canada	Moose Jaw, Sask.....	Apr. 17.....	Furn. water tube boilers and accessories.....	A. W. Mayberry, Chm. Comm.
Minnesota	Duluth.....	Apr. 19, 3 p.m.....	Furn. Georgia pine and creosoted paving blocks.....	Board Fire Commissioners.
New York	Belmont.....	Apr. 22, 10 a.m.....	Constrn. extensions to jail.....	B. B. Ackerman, Board Supervs.
North Dakota	Grand Forks.....	Apr. 22.....	Remodel. county jail.....	County Commissioners.
New Jersey	Newark.....	Apr. 25, 3.30 p.m.....	Furn. 2 motor-power comb. patrol wagons and 1 automobile.....	John Bader, Pres. Bd. Police Comm.
Texas	Brownsville.....	Apr. 29, 10.30 a.m.....	Bldg. court house and jail.....	County Auditor.
Texas	Galveston.....	May 1.....	Constrn. sanitary jail.....	J. M. Church, County Aud.
Cuba	Santiago.....	May 6.....	Constrn. 6,400 meters of tramway.....	La Jefatura del Distrito de Oriente.
Calif. nia	San Francisco.....	May 8, 2.30 p.m.....	Furn. & deliver. 43 double end pay-as-you-enter California type motor cars & 4 extra trucks complete with axles, wheels and motors.....	Board Public Works.

## STREET IMPROVEMENTS

**Brewton, Ala.**—City will shortly let contract for paving cement sidewalks on various streets.

**Phoenix, Ariz.**—Paving of various streets is being discussed. City Engineer Turney's plans and specifications for street paving on South Central and South First aves. as far as Buchanan st., have been adopted.

**Long Beach, Cal.**—Property owners on West Broadway will present petition to City Council asking it to order Broadway paved from Daisy ave. to Water st., into industrial district.

**Monrovia, Cal.**—White Oak ave. is soon to be opened as far as Myrtle ave.

**Nevada City, Cal.**—City Superintendent of Streets H. Shearer has started campaign of macadamizing all of streets of city. Most of rock will be taken from dump at Pittsburg Mine.

**Bridgeport, Conn.**—It has been voted to recommend hearing on April 15 in regard to widening of Fairfield ave., from Clinton ave. to railroad viaduct.

**New Britain, Conn.**—Extension of permanent pavement in West Main st. is being discussed.

**Jacksonville, Fla.**—Following resolution has been unanimously adopted: That County Engineer be instructed to advertise for bids for having Highway ave., from city limits to Lincoln ave., paved 20 ft. wide with granacrete, bids to be opened April 26.

**Tampa, Fla.**—At meeting of City Council Board of Public Works has been ordered to replace macadam paving on Florida ave., from Eighth ave. to Michigan, with vitrified brick.

**Buford, Ga.**—City will vote April 13 on \$10,000 bond issue for paving.

**Belvidere, Ill.**—Paving of West Locust st. with macadam is being discussed.

**Cairo, Ill.**—About \$100,000 will be expended in street improvements.

**Pekin, Ill.**—Council has approved of

paving of Broadway, from Eighth st. to C. & A. tracks.

**Crawfordsville, Ind.**—City will construct 23,100 sq. yds. brick pavement this year with 4-in. concrete base. H. C. McCluer, City Civil Engineer.

**Indianapolis, Ind.**—Resolutions have been adopted for improving of various streets.

**Indianapolis, Ind.**—Final order to pave College ave., from 28th st. to 38th st., with wooden block, has been entered by Board of Public Works, in accordance with wishes of majority of resident property owners. Contracts for work, which is to be done in three sections, will shortly be let. It is estimated work will cost about \$80,000.

**Noblesville, Ind.**—Petition has been filed asking County Council for appropriation of \$15,000 for cutting down hills and grading Indianapolis and Noblesville pike through Delaware Township.

**Lexington, Ky.**—Joint improvement Committee of General Council is planning reconstruction of various streets. Bids on all these streets will be advertised for on all improved materials, including brick, asphalt, wood block, granite and probably asphalt block.

**Crowley, La.**—Council has adopted order to receive bids for paving Parkerson ave., from Mill st. to Court Circle. Vitrified brick, creosoted blocks, bitulithic asphalt and cement will be the materials considered.

**New Iberia, La.**—City Council has adopted ordinance appointing committee to select engineer to draw up plans and specifications for building up and graveling Main st., from Weeks st. to Gebert shingle mill, distance of about one mile, and calling for bids to do work, under plans to be submitted.

**Boston, Mass.**—Loan orders and claims amounting to nearly \$7,000,000, including

\$364,000 for extension of Arlington st. and items from annual appropriation bill amounting to \$5,725,513.02, have been passed by City Council.

**Boston, Mass.**—Appropriations for new streets and new sewers totalling \$625,000 have been passed by City Council.

**Haverhill, Mass.**—Petitions are being received for improving of various streets.

**Malden, Mass.**—Extension of Oliver st., from Bellvale st. to Broadway, 50 ft. wide, is being discussed. Estimated cost, \$11,000.

**Jackson, Mich.**—Jackson County voters have adopted county good roads system, completed returns to-day showing that proposition had carried by 1,108 majority.

**Marshall, Mich.**—Marshall Township will build four miles of good roads.

**Monroe, Mich.**—By vote of 155 to 113 voters of Erie Township have decided to bond township for \$40,000 for purpose of constructing 5½-mile macadam highway along route of United States turnpike.

**Duluth, Minn.**—Property owners of 21st ave. west are in favor of paving avenue from Michigan to Third sts. Council has been requested to secure estimate of cost of paving street from City Engineering Department. It is believed that entire cost of paving street will amount to about \$6,000.

**Duluth, Minn.**—Petition is being considered for paving of Ramsey st., from Central ave. to Grand ave.

**Clarksdale, Miss.**—Coahoma County Supervisors are considering issuance of \$50,000 bonds for road and bridge construction.

**Kosciusko, Miss.**—At special bond election held to authorize Board of Aldermen to issue sidewalk and street bonds for \$30,000, bond issue was carried by vote of over five to one.

**Natchez, Miss.**—Board of Supervisors at April meeting will probably give its sanction to bond issue for \$100,000 for good roads in Adams County.



**Greenfield, Mo.**—Center and Washington Townships of Dade County have voted \$4,000 bond issue for road improvements.

**St. Louis, Mo.**—House of Delegates, 25 to 2, has passed bill authorizing paving of Taylor ave., between Forest Park blvd. and Maryland ave., with wood blocks.

**Sedalia, Mo.**—Sedalia Special Road District Commissioners has special election April 20 to vote on \$200,000 bond proposition to complete construction to district limits of 16 roads radiating from Sedalia. It is expected proposition will carry.

**Absecon City, N. J.**—Bids will be received by Common Council of Absecon City at City Hall on Monday, April 15, at eight o'clock p.m., for the sale of \$5,000 of 5 per cent. road improvement bonds. Samuel Johnson, City Clerk.

**Atlantic City, N. J.**—Ordinance is being considered providing for widening of Ventnor ave., from 60 to 80 ft.

**Atlantic City, N. J.**—Bill providing for paving of Baltic ave. and for agreement between city and Atlantic City Railroad relative to division of expense, has been passed on third reading; also ordinance providing for paving of Ventnor ave., Dewey pl., Oriental, Massachusetts and other avenues.

**Camden, N. J.**—Question of repaving South Second st. is being considered by Council.

**Newark, N. J.**—Taking advantage of bill signed by Governor Wilson authorizing expenditure of \$1,000,000 a year for street opening, Board of Works has adopted resolutions to open new street as first side of "Diamond on the Cross." It will run from Board st. at Central ave. to Market st. depot plaza.

**Perth Amboy, N. J.**—Paving of New Brunswick ave. is being discussed.

**Perth Amboy, N. J.**—Three petitions for grading streets in Kennedale Park section of city have been referred to Committee on Streets and Sewers.

**Bahway, N. J.**—Improvement of streets in Fourth and Fifth Wards is being planned.

**Addison, N. Y.**—Proposition authorizing issue of bonds for \$4,000 has been carried for paving of Main st.

**Amsterdam, N. Y.**—Paving of West Main st. is being considered.

**Brooklyn, N. Y.**—Construction of 35 main thoroughfares in Queens, comprising over 75 miles of roads involving expenditure of about \$2,000,000, will shortly be commenced.

**Cohocton, N. Y.**—Cohocton has voted to appropriate \$10,000 for paving with brick Maple ave. in that village at time of the building of State road next summer.

**Geneseo, N. Y.**—Resolution has been passed for improvement of highway from Mt. Morris to Nunda.

**Lewiston, N. Y.**—Petition is in circulation in town of Lewiston, which Supervisor Nichols of that town presented to Board of Supervisors, asking that stretch of two miles on Ridge rd., between present State road, Route 617, and one to be constructed, Route 30, be improved at same time work on Route 30 is underway. This stretch reaches from Dickersonville to Lewiston town line.

**Medford, L. I., N. Y.**—Extensive highway improvements have been planned.

**Newburgh, N. Y.**—Petition is being circulated among property owners on Liberty st., from South st. to North, asking City Council to order permanent improvement of Liberty st., between two streets named by paving, bonds to be issued to pay for same.

**New Rochelle, N. Y.**—Department of Parks, Docks and Harbors of New Rochelle would like catalogues of paving materials. Charles B. Forbes, Superintendent.

**Niagara Falls, N. Y.**—Board of Estimate and Apportionment has authorized Board of Public Works to purchase asphalt paving repair plant and necessary tools and appliances for repaving asphalt pavements and for use of city at cost not to exceed \$3,500.

**Ogdensburg, N. Y.**—Governor Dix has signed Ogdensburg paving bill, allowing city to raise \$100,000 by bond issue to defray cost of paving some of city's principal streets, with State aid.

**Olean, N. Y.**—Resolution has been adopted forbidding letting of contracts for paving North First st. upon which bids have already been accepted by Commissioners.

**Oneida, N. Y.**—Appropriation of \$17,370 for three-mile State road in town of Sullivan has been voted by Board of Supervisors of Madison County. According to estimates furnished by State Engineer, cost of road will be \$38,600. Of this amount State will pay 55 per cent.,

county 30 per cent., or \$11,580, and town of Sullivan 15 per cent., or \$5,790.

**Rochester, N. Y.**—Bids have been received on contract for treating certain streets with calcium chloride. Lowest bid was 3.45 cts. a sq. yd. submitted by F. X. Yeoman. Other bids submitted were: 3 3/4 cts. a sq. yd. by William Baker; 3 3/4 cts. by William H. Sours, 2d; 4.004 cts. by Thomas Holahan; 4.49 cts. by Schroeder-Hicks Contracting Co.

**Seneca Falls, N. Y.**—Cayuga st. will be paved with brick, change in form of contract between Contractor F. A. Brotsch, of Rochester, and State Highway Department having been effected. Increased cost of paving Cayuga st., from Pine st. to Fall st., about three-fourths of a mile, will approximate \$5,000. Of this sum village will pay one-third and abutting property owners balance.

**Syracuse, N. Y.**—Ordinance has been adopted declaring intention to order pavement in Hawley ave., from Lodi st. to Teall ave.; also ordinance for resurfacing of North State st., from Erie Canal to James st., at cost of \$4,300.

**Syracuse, N. Y.**—Number of resolutions have been adopted providing for construction and extension of several small sections of roads.

**Syracuse, N. Y.**—Resurfacing of pavement in South Salina st., from Brighton ave. to Newell st., has been ordered by ordinance introduced by Alderman Carpenter, and cost fixed at \$12,400.

**Raleigh, N. C.**—One mile of permanent road will be constructed from city limits at Glenwood out to Fairview rd.

**Raleigh, N. C.**—W. L. Wiggs, General Supervisor, has made arrangements to place concrete culvert over Rhamkatte rd. at Caraleigh Mill. Culvert will be 16 ft. across, 15 ft. wide and 7 1/2 ft. deep.

**Bryan, O.**—By vote of 613 to 220, citizens of Bryan have decided for issue of bonds to amount of \$60,000 for paving purposes.

**Cleveland, O.**—Bids will be received by Board of County Commissioners of Cuyahoga County, Ohio, at their office in Cleveland, O., until 11 o'clock a.m. on 24th day of April, for purchase of bonds with interest coupons attached, of County of Cuyahoga, in aggregate amount of \$10,300, for improvement of Fischer Rd. No. 2. John F. Goldenbogen, Clerk.

**Salem, O.**—Resolutions have been passed for laying of better sidewalks.

**Youngstown, O.**—Question of extending Bismark st. to Clyde, Oxford and Oakland ave., to Worthington st., is being discussed.

**Youngstown, O.**—Resolution is being considered for paving of Eagle st., from Rayen ave. to Caldwell st., and Caldwell, from Eagle to Ardale sts.

**Eugene, Ore.**—Ordinances calling for bids on 14,000 lineal ft., nearly three miles, of hard surface paving, have been passed.

**Eugene, Ore.**—Ordinance calling for bids for \$50,000 of paving bonds at not to exceed 6 per cent., has passed. Bids are to be opened on April 29.

**Eugene, Ore.**—Ordinance for paving of East 13th, from Willamette to S. P. right-of-way, to width of 34 ft., has passed; also for paving of Blair st., from Eighth to the S. P. right-of-way, paving to be 38 ft. wide, and for paving of Fifth st., from Olive to Blair, to a width of 42 ft., which is the width of paving now in from Willamette to Olive.

**Chester, Pa.**—Appropriation of \$86,500 has been made for highways.

**Chester, Pa.**—Resolution has been passed that Street Committee advertise for bids for repaving of east side of Market st., from Graham st. to Front st.

**Dunmore, Pa.**—Ordinance No. 199, providing for paving of South Blakely st., from Webster ave. to city line with asphalt, has passed two readings. Estimated cost being \$13,839.64. Ordinance No. 200, providing for paving with asphalt of West Drinker st., Electric ave., Adams ave. and Marion st. to Washington ave., has also passed two readings.

**Lehigh, Pa.**—Lehigh citizens are urging Town Council to take immediate steps towards paving streets.

**Mauch Chunk, Pa.**—Question of street paving is before Mauch Chunk Town Council, and it is very likely that remaining streets will be paved this summer at cost of \$50,000.

**Reading, Pa.**—Measure has been introduced for pavement on Mineral Spring rd., from 18th st. to entrance of Mineral Spring Park.

**Athens, Tenn.**—Election will be held in Athens on April 20 to ascertain will of voters of city on proposition for issuance of \$25,000 of three per cent. interest bearing bonds, proceeds from sale of which is to be used for retiring city's floating indebtedness and for street improvement

work. Improvements will consist of paving with brick or asphalt and cement sidewalks for additional 10 miles to those already laid.

**Chattanooga, Tenn.**—Ordinance appropriating \$1,200 to be used in paving city's share of paving of Cherry st. has been passed on its first reading by members of Municipal Commission.

**Gallatin, Tenn.**—Bonds in sum of \$200,000 have been sold to build turnpikes.

**Springfield, Tenn.**—County Court has unanimously authorized issuance of \$300,000 of pike bonds, proposition having been approved at recent election.

**Austin, Tex.**—City will probably be able to contribute about \$2,000 in money and \$1,000 in work toward improvement of Red River st. to connect with 20-mile loop around Austin.

**Corpus Christi, Tex.**—By majority of 296 votes property owners of city authorized issuance of bonds by city in sum of \$150,000, for paving of streets.

**Corsicana, Tex.**—City is discussing plans for improvement of streets.

**Dallas, Tex.**—Board of Municipal Commissioners has adopted report of Street Commissioner Lee that Knight st. be graded from Cedar Springs rd. to Dickason ave. and that City Secretary advertise for bids for the work. It is estimated by City Engineer Preston that 1,158 yds. of material will have to be removed at cost of \$289.50. Eight hundred and seventy-eight ft. of frontage is involved.

**Dallas, Tex.**—Petition of about 50 residents on Parry ave., from South Carroll ave. to Haskell ave. and on South Carroll ave., from Parry ave. to East Side ave., that Parry ave. and South Carroll ave. be graded, has been referred to Commissioner Lee.

**El Paso, Tex.**—Ordinance has been passed providing for paving of East Overland st., from Campbell st. east to Cotton ave.

**Ennis, Tex.**—Election for bond issue of \$75,000 with which to build roads in Palmer district has been set for May 11.

**Fort Worth, Tex.**—Plans are being considered for paving of Vickery blvd.

**Galveston, Tex.**—Paving of Broadway, between Sixth and 40th sts., is being discussed.

**San Antonio, Tex.**—Ordinance providing for widening of Soledad st., from Travis st. to Girard st., is being considered.

**Terrell, Tex.**—Bonds in sum of \$20,000 have been carried for street improvements.

**Brigham City, Utah.**—Judges have been named by County Commissioners for special road bond election to be held Tuesday, April 9, for purpose of voting on issue of \$175,000 bonds for construction of roads and bridges in Box Elder County.

**Fredericksburg, Va.**—On April 18 people of Stafford County will vote on question of issuing \$100,000 of bonds for improved roads in that county.

**Richmond, Va.**—Smooth paving on Grove ave. to cost \$25,000 has been recommended in lieu of former plan to widen Roseneath rd., which failed of adoption.

**Racine, Wis.**—Improvement of Spring st. is being discussed.

#### CONTRACTS AWARDED

**Birmingham, Ala.**—By City, for 50,000 sq. yds. street paving, as follows: McCartin Paving & Construction Co., 30,000 sq. yds. with sheet asphalt; Southern Asphalt Construction Co., 15,000 yds. with asphalt-concrete; C. M. Burkhalter, 5,000 yds. with binder macadam; contractors all of Birmingham; cost about \$250,000.

**Helena, Ark.**—By City, to Roach-Mannigan Co., as follows: 6,000 cu. yds. excavation, 35 cts.; 10,100 lin. ft. curb and gutter, 30 cts.; 18,270 sq. yds. brick pavement, \$2.03; 3,100 sq. yds. double bond, \$1.65; 4,200 lbs. cast iron, 3 cts.; 20 cu. yds. concrete masonry, \$12, and vitrified pipe, 35 cts. to \$3.45 per lin. ft.

**Montgomery, Ala.**—Paving contracts that aggregate in cost more than \$36,000 have been awarded by Board of City Commissioners to Southern Asphalt & Construction Co. Streets to be paved are Jeff Davis ave. and South Court st. Bidders for contracts were Grocers-Gunter Paving Co., Jamison-Hallowell Construction Co. and Southern Asphalt & Construction Co. On Jeff Davis ave. 1,432 sq. yds. of paving will be laid and on South Court st. 3,699 sq. yds. will be laid.

**Hemet, Cal.**—For constructing cement curbs and sidewalks on Kimball ave. and other streets in Hemet, to Star Cement Co., of Riverside, at 34.94 cts. per lin. ft. for curbs, and 13.94 cts. per sq. ft. for sidewalk. Work comprises about three miles of streets, and total cost will be about \$90,000.

**Los Angeles, Cal.**—To H. Curtis, for improving Henry st., at \$7,772.

**Los Angeles, Cal.**—By Board of Public Works, to Standard American Dredging Co., for filling ditches at Wilmington, from Front st. to Water st. Fill will require movement of 10,000 cu. yds. of earth. Contract price is 24 cts. a cu. yd., which figure includes necessary bulkheading.

**Bridgeport, Conn.**—By Paving and Sewer Commission, to Burns Co., for paving of Park ave., between State st. and Fairfield ave. Bids called for all materials except wood block which was left over from last year and bid of Burns Co. was \$1.39 a sq. yd. Other bids submitted were: Van Kueren & Sons, \$1.46; A. J. Langenfeld, \$1.61; Silliman & Godfrey Co., \$1.45.

**Wilmington, Del.**—By Levy Court, for constructing two miles of road from Stockles Hill to New Castle city limits, and from New Castle western boundary to Hare's Corner, to Ambler Davis Co., of Jenkintown, Pa., for about \$16,000.

**Jacksonville, Fla.**—For paving with gravel and shell Hogan rd., distance of four miles, to Geo. R. Foster, Jr., at 84 cts. per sq. yd. and with brick on Main st., to Jacksonville Engineering & Paving Co., at \$1.37 per sq. yd.

**Jacksonville, Fla.**—By County Commissioners, to Jacksonville Paving & Engineering Co., contract for brick paving Lincoln ave., at \$1.34 per sq. yd., and 18 cts. per lin. ft. for vitrified curbing.

**Clay City, Ill.**—By Illinois Highway Commission, at Springfield, for earth work on Clay City and Newton rd., to G. W. Low & Co.; they bid for excavation on Section 1, 18 cts.; Section 2, 20 cts., and flood gates, \$900 each.

**Oak Park, Ill.**—By Board of Local Improvements, for street paving, as follows: Linden ave., between Superior and Ontario sts., H. G. Joelitz, 451 North blvd., Oak Park; Carpenter ave., between Congress and Madison sts., Chas. M. Porter, 118 N. La Salle st., Chicago.

**South Bend, Ind.**—For paving with brick Hydraulic ave. and S. Fellows st., to H. N. Barnes, for \$12,511, and S. Scott st., to C. H. Defrees, of South Bend, at \$8,068.

**South Bend, Ind.**—For macadamizing Edwardsburg rd., by County Commissioners, to Isaac M. Saples and Schuyler Ackerman, for \$13,480. Only one other bid was submitted, that of John G. Young, of Laporte County, who submitted an offer of \$13,560.

**Vincennes, Ind.**—By Board of Works, for improvement of Lyndale ave., from Second st. to Terre Haute rd., and for improvement of Nicholas st., from First st. to 11th st., to Foulkes Construction Co., of Terre Haute, and work on improvements will start soon as weather permits. Both streets are to be improved with concrete walks and stone curbing. The bids on Lyndale ave. improvement were as follows: Foulkes Construction Co., walks 9 cts. sq. ft., curbing 40½ cts. lineal ft., alley crossings 10 cts. sq. ft.; Frank Jordan and F. S. Kixmiller, walks 9 cts., curbing 43 cts., alley crossings 12 cts.; Charles Hamke, walks 9½ cts., curbing 41 cts., alley crossings 11 cts.; C. N. Gilmore, walks 10 cts., curbing 42 cts.; alley crossings 13 cts.; W. H. Moore, walks 9½ cts., curbing 42 cts., alley crossings 12 cts. Engineer's estimate on construction of Lyndale ave. is as follows: 24,356.6 sq. ft. of walk at 10½ cts. sq. ft., \$2,557.44; 4,978.3 lineal ft. of stone curbing at 43 cts. per ft., \$2,140.66; 244 sq. ft. of alley crossings at 15 cts. per sq. ft., \$36.60; total, \$4,734.90. Engineers estimate on improvement of Nicholas st. is as follows: 26,617 sq. ft. of walks at 10 cts. a sq. ft., \$2,661.70; 5,300.9 ft. of stone curbing at 44 cts., \$2,332.38; 600 sq. ft. of alley crossings at 15 cts., \$90; total, \$5,084.09.

**Burlington, Ia.**—For paving of alley west of Gunnison st., to Young & Buescher.

**Corning, Ia.**—To Dunnegan & Hamilton, for paving with brick in Corning, for about \$39,000.

**Davenport, Ia.**—By Board of Public Works, to Tri-City Construction Co., city, for curbing, excavating and paving with bituminous macadam portion of Sixth st. A. M. Compton, is City Engineer.

**Fairfield, Ia.**—To J. C. Blunk, Ottumwa, Ia., for construction of eroded wood block pavement, with brick block asphalt filler, at Fairfield.

**Muscatine, Ia.**—By City Council, to Aug. Kornenau & Co., of Muscatine, for paving Grandview ave. with brick, about 10,037 sq. yds., at \$1.79 per sq. yd.

**Topeka, Kan.**—By City Commissioners, for 8,572 sq. yds. asphaltic pavement in Washburn College district, to Jos. Ramsey, at \$1.50 per sq. yd.

**Lexington, Ky.**—By Court, for repair-

ing of roads of county as follows: Successful bidders were C. C. Neal for road groups Nos. 2, 3, 4, 6, 7, 8 and 9, at \$1.20 per ton for crushed rock furnished, spread, sprinkled and rolled according to specifications of Road Supervisor, county to retain 10 per cent. of contract price. Bid is for rock to be hauled not less than three miles and hauling for greater distance is to be an advance of 10 cts. per each additional mile. Home Construction Co. secured contract on road groups 1 and 11, at \$1.15 per ton of 2,000 pounds of rock furnished, spread and rolled. W. J. Gormerly was awarded contract at \$1.20 per ton for 265 rods of rock to be placed upon the following roads: Leestown, 40 rods; Yarnellton and Donerail, 40 rods; Bethel, 50 rods; Keene, 10 rods; Parker's Mill rd., lower end, 20 rods; Rice, 10 rods, and Versailles, lower end, 75 rods.

**New Iberia, La.**—For constructing main public highway, from New Iberia to Jeanerette, distance of 9½ miles, to Petro-lithic Good Roads Development Co., for \$52,413.

**New Iberia, La.**—For constructing highway, from New Iberia to Jeanerette, to Howard Egleson, 1210 Hibernia Bank Bldg., New Orleans, for \$52,413.

**Boston, Mass.**—For building 8,600 lin. ft. of bituminous gravel roadway in Grafton, by State Highway Commission, to L. C. Carchia, Boston, at \$10,112.

**Muskegon, Mich.**—By City, for furnishing and delivering about 11,000 cu. yds. of road material, to Lake Shore Stone Co., of Milwaukee, Wis., for \$15,655.

**Potosky, Mich.**—By City Council, for paving in Districts 2 and 3, to Carpenter & Anderson, of Grand Rapids, for \$30,548.

**East Grand Forks, Minn.**—By City, to General Contracting Co., 440 Temple Court, Minneapolis, for paving, at \$46.339; sandstone on concrete will be used.

**Ivanhoe, Minn.**—By City, for paving on State rd. No. 6, to Nels Utope, Tyler, Minn., at 12 cts. per cu. yd.; for curbing on State rd. No. 9, to Henry Emke, Lake Benton, Minn., at 15 cts. per cu. yd.; for 4½ miles sidewalks on State rd. No. 9, to Carl Ingvalson, Ivanhoe, Minn., at 9½ cts. per cu. yd. Karl A. Hansen, County Auditor.

**Chinook, Mont.**—By City Council, to Two Miracle Co., Kalispell, at \$68,000, for grading, curbing, paving and constructing cement sidewalks.

**Bloomfield, N. J.**—By Town Council, for laying Willard ave. concrete curb and gutter, to Schouler Cement Construction Co., Newark, at \$1,798.06.

**Flemington, N. J.**—By Hunterdon County Board of Freeholders, for construction of macadamized road from Clinton-Hampton macadam to High Bridge, to M. Irving Demarest, for \$1,697.

**Perth Amboy, N. J.**—To Graham & McKeon, for grading on Convery pl., for 29 cts. a cu. yd.

**Point Pleasant, N. J.**—By Point Pleasant Borough Council, to J. Edward Harrigan, a local contractor, to build boardwalk on ocean front, work to be completed by June.

**Geneseo, N. Y.**—For grading, curbing and paving Court st., from Wadsworth to Main st., and Bank st., from Main st. to Fountain sq., by Board of Trustees, to Hagaman & White, Geneseo, at \$10,459.

**New York, N. Y.**—By Department of Bridges, to Barber Asphalt Paving Co., 30 Church st., at \$7,860, for repairing asphalt pavements on bridges over Harlem River.

**Niagara Falls, N. Y.**—To H. P. Burgard Co., of Buffalo, for paving of Whirlpool st. and Lincoln pl., at total cost of about \$46,000.

**Olean, N. Y.**—For paving North First st., to D. D. Dugan, at \$20,318.

**Rochester, N. Y.**—By Board of Contract and Supply, for Davis st. brick pavement, to Walter C. Margrander, at \$4,725.50, and for Wesley st. brick pavement, to same bidder, at \$1,729.50. Rochester Vulcanite Co. was successful bidder for asphaltizing Thayer st., at \$7,652.50. Whitmore, Rauber & Vicinus, for asphaltizing Emma st., at \$4,121, and same company Beachwood st. asphalt pavement contract, at \$4,646. Julius Freiderich Co. was awarded asphaltizing contract for Northview Terrace at \$8,464.

**Rochester, N. Y.**—By Board of Contract and Supply, for laying asphalt pavement in Leighton st., to Whitmore, Rauber & Vicinus, for \$7,709.

**Troy, N. Y.**—By Board of Contract and Supply, for improvement of Belle ave., including laying of granite curbing and concrete walk, to Henry W. Golden, at \$7,378.96 and \$6,504, respectively.

**Niles, O.**—By City, for paving Vienna

ave., to W. E. Gartland, of Youngstown, for \$21,602.

**Richwood, O.**—To Welch & Jones, Marysville, O., for construction of 4,200 sq. yds. of Tarvia or Carbo-via pavement, at Richwood.

**Youngstown, O.**—By Board of Control, for paving with brick Elm st., to Turner & Oleson, of Youngstown, for \$10,641, and for improving Beaver rd., to C. J. Chinnock, of Warren, for \$13,887.

**Salem, Ore.**—By City, for construction of Portland cement pavement on Center St., to E. W. Geiger Construction Co., at \$23,532.06.

**Allentown, Pa.**—For construction of three miles of concrete sidewalks, gutters and curbs, to Schaeffer & Ackerman, at \$25,000.

**McKeesport, Pa.**—For repaving of Fifth ave., from Coursin st. eastwardly; Walnut st., between B. & O. crossing, and 16th ave. and Market st., between Fourth and Fifth ave., to Bowman Brothers Co.

**Pittsburgh, Pa.**—To M. O'Herron Co., for grading, paving and improving Second ave., at cost of \$96,993.40.

**Pittsburgh, Pa.**—To Booth & Flinn, for paving and grading Lambert st., at cost of \$40,697.45.

**Pittsburgh, Pa.**—To Ott Bros., for paving, grading and curbing Climax st., at cost of \$11,890.65.

**Swissvale, Pa.**—For grading, curbing and paving, as follows: To McCrady Bros., of Braddock, for Aurelius, Nevada and Agnes sts., and St. Lawrence, River-view and Collingwood aves., for about \$31,854, and to D. J. Madigan & Co., for Alice ave., for \$4,110. E. M. Watt, Superintendent Public Works.

**Wilkes-Barre, Pa.**—By Street Commission of Council, for paving Gates st. with asphalt, to McConville & Fitzpatrick, of Pittston, at \$1.97 per sq. yd., and for paving with brick Courtright ave., to Frank Anstett, at \$2.08 per sq. yd.

**Sioux Falls, S. Dak.**—For grading Seventh st., from Cliff ave. to Lewis ave., to Fanehurst Co., at 23½ cts. per cu. yd.

**Memphis, Tenn.**—By City, to Memphis Asphalt & Paving Co., of Memphis, at \$7,121.72; to pave Fourth st., from Union to Court ave.

**Springfield, Tenn.**—By Robertson County, to Freeman & Robbins, to construct 150 miles of limestone macadam roads.

**Dallas, Tex.**—For paving of North Akard st., to Creosoted Wood Paving Co., at \$10,320.24, and for paving of Live Oak st., to Bitulithic Paving Co.

**Fort Worth, Tex.**—For paving of North Main st., from North Third st. to Cotton Belt Railroad crossing, by City Commission, to General Construction Co.

**San Antonio, Tex.**—By County Commissioners, for clay and grading of Palo Alto rd., from Medina River to county line, to W. H. Davis. Work will cost between \$6,000 and \$7,000.

**Tacoma, Wash.**—By Commissioner of Public Works, Owen Woods, for extension of Jefferson ave. to Center st., from South 27th st., to John Huntington & Co., at \$49,500.

**Green Bay, Wis.**—For paving, to White Construction Co., of Milwaukee, for paving W. Walnut st., Shawano and Oakland aves., Dousman and E. Walnut sts., about 35,432 sq. yds., with asphalt, for about \$70,600, and for paving Crooks st. with tar macadam, for \$13,500.

#### BIDS RECEIVED

**Chester, Pa.**—For street paving, as follows: Barber Asphalt Co., certified check for \$200 for paving of Central ave., from Front st. to Concord rd., with bithumae. Five years guarantee, \$1.80 per sq. yd., \$2.44 per sq. yd. for gutters and curbs; crossing stones, 75 cts. per lineal ft., 20-in. curb, 70 cts. per ft.; reset curb, 10 cts. per ft.; reset crossing stones, 9 cts. per ft. Eighth st., Pussey st. and Lloyd st., with bithumae, \$1.71 per sq. yd.; Jeffrey st., from Fourth st. to Ninth, \$1.80 per sq. yd.; Norris st., from Front st. to P. W. and B. R. R., \$1.77 per sq. yd.; Pussey st., from Second to Fifth, \$1.73; from Seventh to Ninth, \$1.73; Washington st., Barclay to Penn, \$1.74; Madison st., from 20th to 23d, \$1.78; Crosby st., from 22d to 24th, \$1.78; 21st st., Edgmont ave.; Hayes st., Front to Fourth sts., \$1.77; Fourth st., from Engle to Highland ave., \$1.77; 15th st., Chestnut to Upland, \$1.87; 21st st., Edgmont ave. to Madison st., \$1.77; Morton ave., from Mundy's Run to the city line, \$1.74; 23d, Madison to Edgmont ave., \$1.78; 18th st., Providence ave. to Chestnut st., \$1.78; 17th st., Providence ave. to Chestnut st., \$1.88; Paterson st., Concord ave. to Penn st., \$1.80; Franklin st., Front to Fourth st., \$1.77; Highland ave., Ninth to 12th sts., \$1.80; Franklin st., Front st. to Concord ave., \$1.76; Flower st., Third to



Ninth st., \$1.78; Barclay st., Fifth to Seventh st., \$1.75; 12th st., Welsh to Chestnut st., \$1.77; Lloyd st., P. B. and W. R. R. to Ninth st., \$1.78; 23d, Madison to Egmont ave., \$1.90; 18th, from Providence ave. to Chestnut, \$1.99; Pater-son st., from Concord ave. to Penn., \$1.85; Townsend, front to Fourth, \$1.89; High-land ave., Ninth to 12th, \$1.81; Reaney st., front to Fourth st., \$1.89. Sheet As-phalt Bids.—The Barber Asphalt Co.'s bids for sheet asphaltum were as fol-lows: Central ave., front to Concord ave., \$1.95 per sq. yd.; gutters, \$2.44; granite crossing stones, 75 cts. per ft.; granite curb, 70 cts.; resetting curb, 10 cts. Eighth st., Pusey to Lloyd, \$1.83; Jeffrey, Fourth to Ninth, \$1.90; Chestnut, 19th to 20th, \$1.90; Norris, front to P. B. and W. R. R., \$1.89; Pussey, Seventh to Ninth, \$1.85; Washington, Barclay to Penn., \$1.85; Madison, 20th to 23d, \$1.90; 21st, Edgmont to Madison st.; Morton ave., Mundy's Run to city line, \$1.36; Franklin st., front to Concord ave., \$1.87; Flower, Third to Ninth, \$1.90; Barclay, Fifth to Seventh, \$1.85; 12th, Welsh to Chestnut, \$1.89; Lloyd, P. B. and W. R. R. to Ninth, \$1.90; Fourth, Engle to High-land ave., \$1.85; 15th, Chestnut to Up-land, \$1.97. The Delaware Contracting & Construction Co.'s bids for Warrenite pay-ing were as follows: Flower st., Third to Ninth, \$1.83; granite crossing stones, 75 cts.; granite curb stones, 75 cts.; re-setting curbs, 11 cts.; resetting crossing stones, 25 cts.; intersections, vitrified block, 80 cts.; granite, 75 cts.; asphalt, \$1.75; rubble, \$1.15; macadam paving, \$2.10 per ton. Chestnut st., 10th to 20th, \$1.85; Central ave., front to Concord ave., \$1.85; Morton ave., Mundy's Run to city line, \$1.90; Lloyd st., P. B. & W. R. R. to Ninth st., \$1.92; Jeffrey st., Fourth to Ninth, \$1.87; Fourth st., Highland ave. to Engle st., \$1.82; 12th st., Chestnut to Welsh, \$1.81; Norris st., front to P. B. & W. R. R., \$1.84. Bid of Filbertine Paving Co. for wood block paving was declared to be irregular on account of plans and specifications submitted by company failing to note size of block. The Filbertine Co.'s bids for paving with filbertine were as follows: Jeffrey st., Fourth to Ninth, \$1.67; Chestnut st., 10th to 13th, \$1.64; Chestnut st., 14th to 20th, \$1.71; Norris st., front to P. B. & W. R. R., \$1.71; Pussey st., Second to Fifth, \$1.67; Washington st., Barclay to Penn., \$1.67; Edgmont ave., Second to Third, \$1.67; Madison st., 20th to 23d, \$1.71; Crosby st., 22d to 24th, \$1.70; 21st st., Edgmont ave. to Madison st., \$1.67; Mor-ton ave., from Mundy's Run to city line, \$1.67; Franklin st., front to Concord ave., \$1.71; Highland ave., Ninth to 12th, \$1.67; Hayes st., front to Fourth, \$1.70; Fourth st., Highland ave. to Engle, \$1.67; Town-send st., front to Fourth, \$1.67; Flower st., Third to Ninth, \$1.71; Lloyd st., P. B. & W. R. R. to Seventh, \$1.67; Pater-son st., Penn. to Concord ave., \$1.67; Barclay st., Fifth to Ninth, \$1.68; 12th st., Chestnut to Welsh, \$1.73; 15th st., Chestnut to city line, \$1.75; 23d st., Mad-ison to Eddystone ave., \$1.70; 18th st., Providence ave. to Chestnut, \$1.70.

## SEWERAGE

**Oak Park, Cal.**—Movement is started in Oak Park, Sacramento, for bond issue to install sewer system in that part of city, which was recently annexed.

**Santa Clara, Cal.**—Ten miles of sewers, giving Santa Clara one of the most modern systems in State, will be built at cost of \$26,000. Money for the work was recently voted at bond election.

**New Britain, Conn.**—Extension of sewer in La Salle st. will be recommended.

**Pueblo, Col.**—Petition has been pre-sented asking for sanitary sewer to be constructed in blocks 15 and 16. Mattice addition, and which was referred to Com-missioner T. A. Duke and City Engineer Gaymon. Plans, specifications and pro-file for sanitary sewers in block 40, East Pueblo, and block 6, B. P. I. subdivision, have been filed with Council by City En-gineer Gaymon.

**Kendallville, Ind.**—Construction of sewer on Railroad st. is contemplated; cost, \$10,912.

**Oskaloosa, Ia.**—Extensive sewer im-provements are being planned.

**Council Grove, Kan.**—Bonds for \$90,000 have been voted with which to install sewer system and purchase city water plant. Sewer bonds amount to \$25,000.

**Fort Scott, Kan.**—Bids have been op-ened for work on Seventh Sewer Ex-tension No. 5. Thogmartin and Gardiner submitted bid which was slightly over the engineer's estimate. Bid was rejected and Clerk has been instructed to read-vertise.

**Louisville, Ky.**—Bill has been passed

authorizing \$2,000,000 bonds for sewers.

**Opelousas, La.**—Board of Sewerage Commissioners has opened bids submitted for purpose of \$40,000 worth of bonds issued by district and awarded same to Interstate Trust & Banking Co., of New Orleans.

**Boston, Mass.**—Council has passed to their final readings order appropriating by loan \$400,000 for construction of sewerage works within watershed of Charles River Basin.

**Manchester, Mass.**—Plans for sewer system are being considered.

**Lewistown, Mont.**—Proposition to bond city for sewer construction for sum of \$60,000 has been carried.

**Ocean Grove, N. J.**—Proposition to raise \$30,000 for sewage disposal plant has been carried at special election in West Grove district of Neptune Town-ship. Further sum of \$5,000 for main-tenance was voted.

**Perth Amboy, N. J.**—Petition has been received for 15-in. sewer in Broadhead pl., between Sayre ave. and New Brunswick ave.

**Salem, N. J.**—State Board of Health has approved plans and specifications for sewer system and disposal plant for this city as prepared by Engineer Clyde Potts, and Council has passed on first reading ordinance providing for the work. It is stated that proposals will be asked for some time in May. Estimated cost com-plete is about \$79,000.

**Ballston Spa, N. Y.**—It has been voted to lay new sewer in Grove st., from Blood st. to Hide ave. and to Chapman st.

**Corning, N. Y.**—Establishment of new sewage disposal plant is being discussed; estimated cost, \$40,000 to \$50,000.

**Middleport, N. Y.**—Sum of \$100,000 will be expended for sewers and water works.

**Rochester, N. Y.**—Board has authorized city to borrow \$1,000,000 for use in con-structing sewage disposal system on which work is far advanced. This will be accomplished by issuance of city bonds. Ordinance for storm water sewer in 21st and 12th Wards, to cost \$30,074, has been approved.

**Syracuse, N. Y.**—Ordinance has been adopted ordering 12-in. sewer in Maryland and Westminster aves., and fixing cost at \$2,950.

**Troy, N. Y.**—Resolution has been passed for construction of 24-in. sewer in Lincoln ave.

**Celina, O.**—Council has passed resolu-tion to submit question of bonding town for \$30,000 for sewer purposes to peo-ple at primary election May 21. It is be-lieved issue will carry.

**Youngstown, O.**—Question of sewer-ing portion of Brier Hill west of Superior st. is being discussed.

**Youngstown, O.**—Resolution is being considered for construction of sewer in Maryland ave., between Mahoning ave. and city lot No. 17,880.

**Eugene, Ore.**—Construction of trunk sewer across northern end of city will be voted on; also extension of sewers in various streets.

**Chester, Pa.**—Appropriation of \$86,600 has been made for sewers.

**Warren, Pa.**—State Hospital for In-sane is receiving bids for brick sewage disposal plant.

**Fall River, R. I.**—Two additional sew-ers have been recommended for construc-tion by Committee on Sewers and con-sideration is now being given to other sewer construction work in various parts of city. There is \$70,000 available this year for construction of sewers and it looks as if big sewer loan would have to be secured to do all work that is re-quired. It is believed that something like \$300,000 will be required to finish up all work.

**Aberdeen, S. Dak.**—Construction of new sewer and water works systems to cost \$200,000 is planned. Sewerage plans pro-vide for large sedimentation tank and fil-tration bed, with 10,000 ft. of sewer force mains. Plans also contemplate puri-fication and beautifying Moccasin Creek, into which part of city sewage is now dumped.

**Chattanooga, Tenn.**—Block of \$150,000 of sewer bonds will be sold for sewer improvements.

**Dallas, Tex.**—It is probable that ex-tension of sanitary sewers, made pos-sible by order of \$100,000 sanitary sewer bond issue will be commenced shortly.

**Dallas, Tex.**—All bids for sanitary sewer on Routh st. have been rejected, be-cause sewer has been changed and placed in alley and new bids have been received. Three new bids were opened. Dallas Home Improvement Co. having lowest at \$1,372. The three bids varied only \$1.50.

**Dallas, Tex.**—Report of Commissioner Lee, recommending that city accept county's offer to pay 36.93 per cent. of cost of constructing storm sewer on

Houston st. to approach of viaduct has been adopted and City Secretary has been ordered to advertise for bids. Cost is es-timated at \$1,504.

**Fort Worth, Tex.**—Proposal for sewer for Lakeview addition has been referred to Water Works Commission and Com-missioner of Finance and Revenue.

**Terrell, Tex.**—Bonds in sum of \$25,000 have been voted for water works im-provement.

**Richmond, Va.**—Ordinance has been passed authorizing construction of sewer in 22d st., from M st. to new city limits, to cost \$1,854.05.

## CONTRACTS AWARDED

**Oxford, Ala.**—By City, to J. B. Mc-Crary Co., Atlanta, Ga., to construct sewer system.

**Vacaville, Cal.**—For supplying materi-als for construction of septic tank for new water system, to Awerly & Ellison.

**Bridgeport, Conn.**—By Paving and Sewer Commission, to Pierce Manufactur-ing Co., for sewer to be placed in Park ave., at 72 cts. per lineal ft. and connec-tions 55 cts. Other bids were: B. D. Pierce, Jr., 87 cts. per ft., connections, 60 cts., and rock excavation, \$5; manholes, \$3.75; Burns Co., 93 cts. per ft. and man-holes, \$4.

**Bradentown, Fla.**—For constructing sanitary sewer system, to Isaac Mickler, Chattanooga, Tenn., at \$24,500.

**Brookfield, Ill.**—For construction of sewer system from plans of Chas. N. Roberts, Reaper Bldg., Chicago, to Amer-ican Construction Co., 32 N. Clark st., Chicago, for about \$15,000.

**Clinton, Ill.**—By Commissioners of Nixon Special Drainage District, to H. S. Walter, Lane, Ill., for construction of 16,517 ft. of 8- to 28-in. tile ditches.

**Galesburg, Ill.**—To O'Connor Trading & Construction Co., of Galesburg, for con-structing Sixth Ward sewer, for about \$9,425.

**Metropolis, Ill.**—By Board of Super-visors of Massac County, to Cook Con-struction Co., Des Moines, Ia., at \$156,000, for drainage system.

**Hammond, Ind.**—By Board of Public Works, for construction of Calumet lateral sewers, to F. G. Proudfoot, 127 N. Dearborn st., Chicago.

**Portland, Ind.**—For constructing sewer, to Griffith & Sprinkle, at \$7,469.

**Terre Haute, Ind.**—By Board of Public Works, for constructing vitrified pipe sewers, to W. C. Dorsey, the Bowen Con-struction Co., the Foulkes Contracting Co., W. H. Roberts, Sr., J. P. Welch and Luke Sweeney, all of Terre Haute. Rob-ert Burns is City Engineer.

**Dubuque, Iowa.**—For constructing 8-in. tile pipe sanitary sewer in Kniest st., to O'Farrell Contracting Co.

**Chanute, Kan.**—By Council, for con-struction of main sewer No. 3 in north part of city, and outlet, to E. J. Schulte, for \$8,686.

**Mulvane, Kan.**—For constructing sew-ers, to E. M. Eby, Wellington, Kan., at \$9,864.

**Albert Lea, Minn.**—For constructing sewer system to consist of 1,490 ft. of 10-in., 6,800 ft. of 8-in. pipe sewers and 30 manholes, to Illstrup & Olson, 968 Laurel st., Minneapolis, Minn., at \$12,980.83. Other bids were: Lars Overn, St. Peters, Minn., at \$15,300; A. L. Jones, Sioux Falls, S. Dak., at \$14,214.97; Green Bros., Albert Lea, at \$13,100.69; Haggart Con-struction Co., Fargo, N. Dak., at \$13,250; Pastont Lawrence Co., Duluth, Minn., at \$13,150, and E. T. Sykes, Minneapolis, Minn., at \$13,354.35.

**Shelbina, Mo.**—For construction of lateral sewer, to T. C. Brooks & Son, Jackson, Mich., at following bid: 17,692 lineal ft. of 8-in. sewer pipe, at 19 cts. per ft.; 910 lineal ft. of 10-in. sewer pipe, at 28 cts. per ft.; 1,510 lineal ft. of trench not deeper than 6-in., 18 cts. per ft.; 8,935 lineal ft. of trench between 6- and 8-in. in depth, at 28 cts. per ft.; 5,957 lineal ft. of trench between 8- and 10-in. in depth, at 38 cts. per ft.; 2,120 lineal ft. of trench between 10- and 12-in. in depth, at 60 cts. per ft.; 80 lineal ft. of trench between 12- and 14-in. in depth, at \$1.20 per ft.; 470 6-in. on 8-in. Y connections, at 90 cts.; 12 6-in. on 10-in. Y connections, at \$1; 36 manholes, at \$43; 10 flush tanks, at \$30; lumber, at \$40; 12 lineal ft. 8-in. c. i. pipe, at \$1.75 per ft. Total, \$12,925.54. Total of other bids are as follows: Goodwin & Ryan, Springfield, Ill., at \$13,967.38; Hal-sey Construction Co., St. Joseph, Mo., at \$16,208.93; Edgar Main, Liberty, Mo., at \$14,106.70; F. R. Stone, Lima, O., at \$12,991.16. Burns & McDonnell, Engineers, Kansas City, Mo.

**Bloomfield, N. J.**—By Town Council, as follows: Glenwood and Maolis aves. storm sewer, to Frank Moriello, Orange, \$1,657.40, and for storm drain, James st.

to Third River, to James T. Boylan, Belleville, at \$314.67.

**Brooklyn, N. Y.**—By President Borough of Queens, for construction of sewers in various streets, to J. H. Holmes, at \$26,336 for sewer in Bay ave., from Dickerson to Wave Crest aves., and other streets. Lowest bidders on other contracts were: Joseph Sigretto, \$30,163, sewer on Hamilton ave. and other streets; MacFarlane Contracting Co., at \$25,065, sewer in Troutman and other streets; Joseph L. Sigretto, \$13,277, sewer in Brevoort and other streets; J. A. Holmes, \$28,046, sewer in Jamaica ave. and other streets; Frank Street, \$2,322, sewer in Newtown rd. and other streets; Gabriel Hill, \$14,146, sewer in Flushing ave., and \$180 for receiving basin at 14th st.

**Hobart, N. Y.**—For constructing sewer system and disposal plant, to Thomas R. Crane, Schenectady, N. Y., at \$20,324. Other bidders were Ingalls Stone Co., Oneonta, N. Y., at \$23,410; Kaltean Frank Co., Schenectady, N. Y., at \$23,172; P. L. Scholl & Co., Reading, Pa., \$23,820; Peter Flanagan & Son, Scranton, Pa., \$20,459, and Frank Spasato, Syracuse, N. Y., at \$20,324.

**Olean, N. Y.**—For laying sewer in North First st. to Dominick Gregory.

**Rochester, N. Y.**—By Board of Contract and Supply for another portion of sewage disposal system, involving laying of pipe from Glenwood ave. through Deep Hollow to foot of Hastings st., where connections will be made with tunnel under river, to Ripton & Murphy, for \$41,697.50.

**Richmond, Va.**—For construction of sewer in Leonard st., to A. W. Maynard, at \$9,069.

**Richmond, Va.**—For terra cotta sewer pipe, to Warner Moore & Co., at 70 per cent. from list price.

**Tacoma, Wash.**—By Commissioner of Public Works, for construction of Indian addition sewer serving Rogers School, to John Gallucia, at \$23,000.

#### BIDS RECEIVED

**Los Angeles, Cal.**—For constructing Hollywood main sewer as follows: P. A. & C. H. Howard, \$347,257; S. M. Kerns, \$353,577; E. A. Baker, \$376,730, and R. C. Lowell, \$434,975. Bid of P. A. & C. H. Howard, lowest bidder on above Hollywood main sewer, and some of principal unit prices in their bid are as follows: 7,370.87 lin. ft. 42-in. concrete brick, \$7.86; 9,635.1 lin. ft. same in tunnel, \$15.15; 260 lin. ft. 33-in. double brick, \$8.76; 385.87 lin. ft. 33-in. concrete brick, \$4.82; 2,129.98 lin. ft. 30-in. concrete brick, \$4.67; 1,764.02 lin. ft. 27-in. concrete brick, \$5.26; 806.72 lin. ft. 24-in. d. s. vitrified pipe, \$3.38; 2,411.73 lin. ft. 22-in. d. s. vitrified pipe, \$3.45; 5,361.65 lin. ft. 20-in. d. s. vitrified pipe, \$3.55; 1,333.71 lin. ft. same in tunnel, \$3.81; 5,160.74 lin. ft. 18-in. d. s. vitrified pipe, \$3.22; 1,348.02 lin. ft. 16-in. vitrified pipe, \$3.67; 5,237.19 lin. ft. 14-in. vitrified pipe, \$2.32; 4,153.87 lin. ft. 12-in. vitrified pipe, \$1.70; 5,094.52 lin. ft. 10-in. vitrified pipe, \$1.66; 9,237.51 lin. ft. 8-in. vitrified pipe, \$1.54; 72 brick manholes, each, \$105.98; 3 concrete manholes, each, \$100.36; 11 drop manholes, \$180.76; 19 S drop manholes, \$133.68; 3 T drop manholes, \$94.15; 11 V drop manholes, \$293.44; 24 junction chambers, each, \$80.13; 22 chimneys, each, \$3.75; 14 chimneys, each, \$2.35; 141 chimneys, each, \$3.10, etc. John Radich is reported to have submitted lowest bid, at \$17,600, for construction of sewer in Hooper ave. and other streets.

**Hartford, Conn.**—For construction of sewers, as follows: State st., Bernardino & Silvestri, Hartford, Conn., \$2.45 per lin. ft. for 12-in. tile, \$2.35 for 15-in. tile; manholes, \$40 each; O'Neil Bros. & Nero, Hartford, Conn., \$5, \$5.25, \$40; John Manuchio, Hartford, \$3.10, \$3.35, \$50; Charles H. Slocumb & Co., Hartford, \$3, \$3.75, \$45; Angelo Conti & Co., Hartford, \$3, \$3.10, \$50; Piersen Engineering & Construction Co., Hartford, \$2.70, \$2.95, \$60; Hartford Paving & Construction Co., Hartford, \$3.20, \$4.35, \$65; Frank Dinollo, Hartford, \$9, \$9.95, \$69. Center st., O'Neil Bros. & Nero, Hartford, \$1.40 per ft. for 12-in. tile, \$40 each for manholes; Hartford Paving & Construction Co., \$1.15, \$40; Piersen Engineering & Construction Co., \$1.30, \$35; Frank Dinollo, \$1.03; Bernardino & Silvestri, Hartford, \$1.45; Angelo Conti & Co., \$1.20, \$45; John Manuchio, \$1.10, \$45; Charles H. Slocumb & Co., \$1.20, \$40.

**Chester, Pa.**—Bids for construction of sewers as follows: M. Honan Co., Cambridge Trust Co., security; Lloyd st., Sixth to Seventh sts., 15-in. terra cotta, \$1.15; Y branches, \$1.10; manholes, \$1.10; manholes, \$20; rock, per cu. yd., \$4.25; Bunting, Second to Third sts., 8-in. terra cotta pipe, 93 cts.; Y branches, 55 cts.;

manholes, \$40; rock, per cu. yd., \$4.25; Chestnut st., 15th to 16th sts., 8-in. terra cotta pipe, 97 cts.; Y branches, 55 cts.; manholes, \$40; rock, \$4.25; Central ave., 12th st. to Concord rd., 8-in. terra cotta pipe, 93 cts.; Y branches, 55 cts.; manholes, \$40; rock, \$4.25; extension to Ivy st. sewer, 8-in. terra cotta pipe, 90 cts.; Y branches, 55 cts.; manholes, \$40; rock, \$4.25; Crosby st., 22d to 23d sts., 8-in. terra cotta pipe, 93 cts.; Y branches, 55 cts.; manholes, \$40; rock, \$4.20. Pritchard & Oliver's bid: Lloyd st., Sixth to Seventh sts., 15-in. terra cotta pipe, \$1.37; Y branches 45 cts.; manholes, \$35; rock, \$4; Chestnut st., 15th to 16th sts., 8-in. terra cotta pipe, 97 cts.; Y branches, 45 cts.; manholes, \$35; rock, \$4; Bunting st., from Second to Third sts., 8-in. terra cotta pipe, 84 cts.; Y branches, 45 cts.; manholes, \$35; rock, \$4; Central, 12th st. to Concord ave., 8-in. terra cotta pipe, 84 cts.; Y branches, 45 cts.; manholes, \$35; rock, \$4; extension to Ivy st. sewer, 8-in. terra cotta pipe, 84 cts.; Y branches, 45 cts.; manholes, \$35; rock, \$4; Crosby st., 22d to 23d sts., 8-in. terra cotta pipe, 87 cts.; Y branches, 45 cts.; manholes, \$35; rock, \$4. J. Hanna & Sons' bids were as follows: Crosby st., 22d to 23d sts., 8-in. terra cotta pipe, 84 cts.; Y branches, 45 cts.; manholes, \$34; rock, \$4; Chestnut st., 15th to 16th, 8-in. terra cotta pipe, 92 cts.

#### WATER SUPPLY

**Hamburg, Ark.**—City will authorize issuance of additional bonds to extend water mains and electric light plant.

**De Beque, Col.**—Bond issue of \$20,000 for new mountain water system has been carried.

**Fountain, Col.**—Question of issuing \$40,000 bonds for water works has been carried.

**Kersey, Col.**—Proposition of building \$15,000 water works system has been carried.

**Ridgeway, Col.**—It has been voted to issue \$30,000 worth of bonds with which to buy water system now owned by A. E. Walker.

**Hartford, Conn.**—Appropriation of \$50,000 has been passed for new pumping station.

**Buford, Ga.**—City will vote April 13 on \$5,000 bond issue for water works.

**Pavo, Ga.**—Bond issue of \$4,000 has been voted for water works improvements.

**Council Grove, Kan.**—Bonds for \$90,000 have been voted with which to purchase city water plant and put in sewer system. Sewer bonds amount to \$25,000 and remaining \$65,000 worth of bonds will be used for the purchase and improvement of water plant.

**Framingham, Mass.**—Bond in sum of \$36,000 have been voted for water works extension.

**Collingswood, N. J.**—Municipal ownership as a means of getting adequate and decent supply of water for the borough is ardently advocated.

**Jersey City, N. J.**—Street and Water Board has directed Engineer Van Keuren to prepare specifications for proposed Greenville water main; estimated cost, \$150,000.

**Balston Spa, N. Y.**—It is proposed to meter village at cost of \$10,000, and people will be asked to vote on question of bond issue.

**Ballston Spa, N. Y.**—It has been voted to ask for bids for laying 3,000 ft. of new water main in West and Center sts.

**Buffalo, N. Y.**—A conference will probably be held to consider plans for reconstruction of pumping station, which collapsed on June 30, 1911.

**Churchville, N. Y.**—At meeting of Village Board Village Clerk was instructed to notify Engineers Witmer and Brown, of Buffalo, that their proposition on proposed water works system had been accepted by Committee. Proposition will be brought before people for a vote.

**Middleport, N. Y.**—Sum of \$100,000 will be expended on water works and sewers.

**Niagara Falls, N. Y.**—Board of Estimate & Apportionment has sold issue of \$17,000 water bonds to Adams & Co., of New York.

**Schenectady, N. Y.**—Board of Contract and Supply has authorized Secretary to advertise for bids for considerable amount of pipe for water main extensions.

**Wolcott, N. Y.**—Citizens have voted for issuance of bonds for construction of water works system.

**Spencer, N. C.**—City is considering construction of water works.

**Statesville, N. C.**—City is contemplating installing additional filter at water station.

**Akron, O.**—Check amounting to \$845,000 will be paid to officials of Akron

Water Works Co. in a few days for purchase of plant.

**Alliance, O.**—Storage basin to hold 30,000,000 gals. of water will be built near Westville.

**Dayton, O.**—City Council has passed ordinance providing sum of \$25,000 for purpose of giving water relief to residents of Dayton View and Riverdale this coming summer.

**Alva, Okla.**—City has voted \$55,000 water works bond issue.

**Aberdeen, S. Dak.**—Construction of new water works and sewer system to cost \$200,000 is planned. Water works improvements call for large concrete reservoir with capacity of 1,200,000 gal., and laying of about 1,000 ft. of new water mains.

**Pecos, Tex.**—Engineer James F. Brook, of Palestine, Tex., engaged jointly by City Council and Pecos Commercial Club to prepare preliminary plans and estimates on system of soft water for this city, has completed his work and reported that cost of system would be \$84,870 complete.

**Waco, Tex.**—Water bonds to amount of \$400,000 have been carried.

**Gordonsville, Va.**—City has voted \$10,000 bond issue for extension of water works.

**Woodland, Wash.**—City is contemplating construction of water works plant.

**Huntington, W. Va.**—City Commissioners have accepted request of Chamber of Commerce to put municipal water works project to test vote on May 14 at regular city election.

**Parkersburg, W. Va.**—Bond issue of \$100,000 for construction of storage reservoir, as well as for making extensive improvements to water works system of city, carried at special election.

**Sheboygan, Wis.**—Water Commission has decided to purchase Prescott triple expansion pump for water works system. Pump has capacity of 8,000,000 gals. It is to cost \$12,500, including engine, but price does not include concrete foundation, which will cost from \$1,000 to \$15,000.

#### CONTRACTS AWARDED

**Dermott, Ark.**—For enlarging water system, to R. M. Galbraith, Pine Bluff, Ark. Contract includes construction of 100,000-gal. steel tank, laying 3,000 ft. of water mains and drilling an 8-in. well.

**Donnellson, Ia.**—To Des Moines Bridge & Iron Co., Des Moines, for construction of pipe line, hydrants, valves, etc., and for erection of 50,000 gal. tank, 90 ft. tower, at \$3,760 and \$2,731, respectively.

**Baltimore, Md.**—For furnishing 13 gate and check valves, to Pratt & Cady Co., at \$5,500.

**Baltimore, Md.**—By Board of Awards, to King-Ganey Co., of New York, at \$374,884, to construct storage reservoir dam across Gunpowder River at Loch Raven to have capacity of 2,000,000 gal.

**Baltimore, Md.**—By City, to David M. Andrew Co., Mount Vernon pl. and 26th st., Baltimore, at \$17,121.25, to repair Mount Royal pumping station.

**Winnipeg, Man.**—For furnishing and installing 5,000,000-gal. horizontal turbine pump, to Chapman & Walker, Ltd., Toronto, Ont., at \$3,670.

**Bayonne, N. J.**—By City Council, for new 16-in. water line to replace 8-in. one in Constable Hook section, to B. N. Braunworth, of New York, whose bid of \$6,572.15 was the lowest.

**Bloomfield, N. J.**—By Town Council, for furnishing cast iron pipe for use in Water Department, to Florence Iron Works, Philadelphia, at \$8,336.

**Jamestown, N. Y.**—By Water Commission, for construction of 16-in. water main, from Falconer to Levant pump station, to J. Victor Johnson & Co., for about \$18,000.

**Wicopee, N. Y.**—By Board of Water Commissioners, for reconstructing concrete dam and other appurtenance at Wicopee, near Tompkins Corners, to Peekskill Construction Co., of Peekskill, for \$27,415.

**Euclid, O.**—To Gould & Maybach, Colliwood Station, Cleveland, for construction of water mains in portion of Euclid rd.

**Oklahoma City, Okla.**—By City Commissioners, for 10,000,000-gal. pump, to Snow Pump Mfg. Co., for \$22,500; also to Erie City Iron Works, for boiler for water works, at \$4,950.

**Aspinwall, Pa.**—By City, for constructing reservoir, to Michael Kruth, of Sharpsburg, Pa., for concrete work, at \$8.91 per cu. yd., and excavating, at 97 cts. per cu. yd.

**Bethlehem, Pa.**—By Borough of Bethlehem, to Donaldson Iron Co., of Emmaus, to furnish 423 tons of piping for new



municipal water plant, at cost of nearly \$9,500.

**Pittsburgh, Pa.**—For steel rising main and appurtenances for mission st. pumping station, to M. Orrison & Co., first and McKean sts., at about \$12,019.

**Sheboygan, Wis.**—By Board of Water Commissioners, to Fred M. Prescott Steam Pump Co., Milwaukee, Wis., for furnishing and installing pumping engine in municipal water works station, at \$12,500.

## LIGHTING AND POWER

**Hamburg, Ark.**—City will authorize issuance of additional bonds for extension of electric light plant and water works.

**Grimes, Cal.**—Street lighting system is to be installed in the town of Grimes, Colusa County, where an electric station has just been established.

**Nevada City, Cal.**—Construction of municipal light plant is being discussed.

**Roseville, Cal.**—Specifications for construction of new electric distributing plant have been presented by City Engineer U. S. Marshall, and bids will shortly be received.

**Avilla, Ind.**—Laying of gas mains at cost of \$18,000 is being discussed.

**Council Grove, Kan.**—Voters have awarded electric light franchise to G. W. Harlin. A 24-hour current will be furnished.

**Lynn, Mass.**—Council is planning installation of "Great White Way."

**Michigan City, Ind.**—Board of Public Works has received from City Engineer H. M. Miles plans and specifications for proposed ornamental street lighting system to be installed in Franklin st., and Board passed resolution declaring public necessity to exist for improvement. Mr. Miles' estimate of cost is \$9,500, which will amount to about \$1.50 a running foot.

**Dexter, Me.**—Project of having town of Dexter make 5 or 10-year contract with Central Maine Power Co. for street lighting is being discussed.

**Marblehead, Mass.**—The Electric Light Commission has decided to reconstruct incandescent system of town by displacing old lights, which are in use, for Tungsten lights, which may be burned at less expense and which will give better light.

**Eveleth, Minn.**—City Council has approved contract with Home Electric & Heating Co. for lighting 48 ornamental clusters on Grant ave. and Pierce st., forming "White Way." Price agreed upon was \$6 per month per cluster, consisting of five 100-watt lights.

**Burlington, N. J.**—Common Council has passed ordinance providing for municipal ownership of electrical lighting system.

**Millville, N. J.**—Engineer Temple, employed by city to estimate cost of erection and operation of municipal electric plant has reported to Council that suitable electric plant can be fully equipped for \$30,000. Plant would serve 150 arc lights and 70 incandescents. Cost to operate plant per annum, he said, would be about \$8,412.50.

**Newton, N. J.**—Dissatisfied with lighting service on streets as furnished by Newton Gas & Electric Co., Town Committee has decided to take steps toward installation of municipal lighting plant. Present lighting company is private concern, which is now in hands of receiver.

**Amsterdam, N. Y.**—Mayor Dealy has recommended that city erect municipal lighting plant.

**Spencer, N. C.**—City is considering construction of electric light plant.

**Arlington, O.**—Security Savings Bank and Trust Co., of Toledo, will be awarded issue of \$2,500 worth of electric light plant improvement bonds.

**Cleveland, O.**—Bids will be received at office of City Auditor, room 213 City Hall, until 12 noon, April 8, for purchase of \$1,000,000 electric light coupon bonds. Thomas Coughlin, City Auditor.

**Salem, O.**—Plans have been completed by Bailey Engineering Co. for new lighting system.

**Sioux Falls, S. Dak.**—Improvement to lighting system is being discussed.

**Cheyenne, Wyo.**—Special meeting of City Council has been called by Mayor Bresnahan to consider matter of giving Colorado Power Co. franchise to wire city of Cheyenne for electric power.

## CONTRACTS AWARDED

**Edmonton, Alta.**—To Babcock & Wilcox Co., of Montreal, Que., for four 478 horsepower water tube boilers, with chain grate stokers, erected complete for about \$46,300.

**South Pasadena, Cal.**—For ornamental concrete lamp posts along both sides of Marguerite ave., north of Alhambra rd., to Jacobs Electric Co., of South Pasadena. Their bid of \$1,175 was the lowest. W. A. McNally, of Los Angeles, bid

\$1,356. Price named includes wiring of posts.

**Leitchfield, Ky.**—For installation of electric light plant, by City Council, to Seager Engine Works, Lansing, Mich.

**Falmouth, Ky.**—For construction of municipal electric light plant, to Frazer & Bush, Lexington, at \$10,000.

**New Iberia, La.**—For construction of power plant near New Iberia, to Jerry & Taylor, New Orleans.

**Holyoke, Mass.**—By Lighting Department, for extensions and renewals at gas plant, to Isbell-Porter Co., of Newark, N. J., for \$134,467.

**Vineland, N. J.**—By Council, for new luminous arc light system, to Westinghouse Electrical & Mfg. Co., at \$4,975.

**Rogersford, Pa.**—By Town Council, for street lighting, to Philadelphia Suburban Gas & Electric Co.

**Decatur, Tex.**—By City Council, to Dallas firm for machinery for new electric light plant. Something like \$16,000 will be expended in improvements and putting up plant which was recently destroyed by fire.

## FIRE EQUIPMENT

**Los Angeles, Cal.**—Plans have been completed for erection of two-story brick fire house in Bedford sq. tract on Western ave., between Third and Fourth sts. Tower will be 64 ft. high. Estimated cost, \$15,000.

**Beardstown, Ill.**—New fire truck will be purchased by special committee.

**Marshalltown, Kan.**—City Council is considering purchase of auto fire engine.

**Dowagiac, Mich.**—Purchase of auto fire truck has been recommended.

**Auburn, N. Y.**—Purchase of complete automobile equipment for Fire Department and sale of all horses has been recommended by Mayor O'Neil in message to Common Council.

**Ballston Spa, N. Y.**—Board of Trustees has voted to buy 500 ft. of hose for Union Fire Co., and Clerk has been instructed to advertise for bids to be submitted at next regular meeting April 9.

**Ballston Spa, N. Y.**—Movement has been started to secure automobile fire truck for Fire Department. Matter has been taken up by Matt Lee Hook and Ladder Co., and it is expected other companies will use their efforts to secure one.

**Niagara Falls, N. Y.**—Plans have been drawn for new fire hall to take place of Third st. hall, and for new hall on Schoellkopf site in new north end industrial section. Third st. hall will cost \$17,000 and north end hall \$38,000.

**Port Jervis, N. Y.**—Fire Committee has reported that 450 ft. of wax and gum treated fire hose is needed.

**Springfield, Ore.**—Committee from Council has been appointed to purchase requisite amount of fire hose, hose carts and other necessary paraphernalia to bring system up to required efficiency.

**Tamaqua, Pa.**—Borough is in the market for first-class fire engine or steamer of the latest type. Edward M. Hirsh, Secretary.

**Warren, Pa.**—Purchase of auto fire truck is being discussed.

**West Middlesex, Pa.**—Fire Department will purchase 500 ft. of fire hose.

**Waco, Tex.**—Fire Department bonds for \$25,000 have been carried.

**Niagara Falls, Ont., Can.**—City Council has adopted resolution providing that rubber tires be placed upon new hose wagon to be purchased for Fire Department. It was original intention to purchase \$500 worth of new hose, but this appropriation will now be cut down to \$250 to allow for purchase of rubber tires for new wagon.

## CONTRACTS AWARDED

**Los Angeles, Cal.**—For fire hose, by City Commissioners, to Hudson Mechanical Rubber Co., for 1,000 ft. at \$1 per ft.; also to Eureka Fire House Manufacturing Co., for 1,000 ft. at same price.

**Lawrence, Mass.**—For furnishing 2,000 ft. of hose for Fire Department, between Eureka Hose Co., of New York, and Cornelius Callahan Co., of Canton, each one of which will furnish 1,000 ft., former at 70 cts. a foot and latter at 74 cts. a foot. Bids were as follows: Eureka Hose Co., New York, 70 cts. a foot; Cornelius Callahan Co., Canton, 74 cts. a foot; Boston Engine & Supply Co., Boston, 71 1/4 cts. a foot; Cornelius Callahan & Co., Boston, 75 cts. a foot; Gutta Percha Hose Co., Boston, 75 cts. a foot; Boston Woven Hose Co., Boston, 75 cts. a foot; O. F. Kress & Son, Lawrence, 76 cts. a foot.

**Atlantic City, N. J.**—By Fire Department Committee, for erection of Atlantic and California aves. fire station, to Wilbert Beaumont, at \$65,800.

**Richmond, Va.**—By Board of Fire Commissioners, to Knox Automobile Co., for combination motor fire engine. Contract was also awarded to same company for three Knox standard fire chief cars Model L, with double rumble seat, all to be delivered in Richmond in 70 days.

## BIDS RECEIVED

**St. Paul, Minn.**—For No. 3 steam fire engine, as follows: American-La France Fire Engine Co., Elmira, N. Y., \$5,825; Ahrens Cox Fire Engine Co., Cincinnati, O., \$5,800; Nutt Fire Engine Co., Minneapolis, \$5,765, and the International Power Co., Providence, R. I., \$5,375.

## BRIDGES

**Los Angeles, Cal.**—Plans and specifications have been adopted by Supervisors for bridge to span Los Angeles River at Lankershim ave. Bridge will be constructed of steel and will be substantial in every respect.

**Wilmington, Del.**—Levy Court will instruct Bridge Committee of Court to advertise for bids for building bridge that will span Christiana River at Third st. Bids will be asked for building both vertical and roller lift type of bridge in order to give builders of both types chance to furnish estimates.

**Vassar, Mich.**—It has been voted to bond town for \$10,000 for purpose of replacing old wooden bridge over Cass River.

**Albany, N. Y.**—Appropriation of \$45,000 has been granted for concrete arch bridge over Black River Canal at Lyon Falls.

**Rapid City, S. Dak.**—Bonds for two bridges, one at Wasta and other at Creston, both to span Cheyenne River, carried in special election held here for that purpose, vote being about four to one for bridges, which will cost approximately \$50,000.

**Springfield, Tenn.**—Appropriation of \$3,750 has been made for bridge to be erected across Sycamore Creek, connecting Davidson and Robertson Counties.

**Dallas, Tex.**—Report of Street Commissioner Lee, recommending that bids for Peak st. creek culvert at Parry and Exposition ave. be advertised for, has been adopted. Estimated cost is \$7,800, to be borne jointly by street railways, Dallas Terminal Railway and city.

**Powhatan, Va.**—Board of Supervisors is considering erection of bridge across James River at Michaux Ferry, connecting Powhatan to Goochland at Maidens Station; estimated cost, \$25,000.

## CONTRACTS AWARDED

**Jacksonville, Fla.**—By Board of County Commissioners, for construction of concrete and steel draw bridge over Trout Creek, to Edwards Construction Co., of Tampa, at \$19,757.

**Macomb, Ill.**—By Road Commissioners and Bridge Committee of Emmet Township, to Harry C. Holmes, at \$943, for construction of bridge near Callahan Home.

**Fort Wayne, Ind.**—For constructing three-span concrete bridge across Maumee River, at Coombs st., by County, to Herman Tapp Construction Co., at \$56,390, from plans designed by George Jaap. Other bids were: Grosvenor plan, \$56,430; county plan, \$56,015; W. H. Roney, Gary, Ind., stone-faced concrete, Grosvenor plan, \$58,400; J. W. Turner, Des Moines, Iowa, Grosvenor plan, \$65,000; National Concrete Co., Indianapolis, own plans, \$57,978; steel, \$48,094; Hackedorn Engineering Co., Indianapolis, own plans, \$59,977; George Jaap, Fort Wayne, Grosvenor plan, \$59,000; Weatherhogg plan, \$63,000; own plan, \$56,464; county plan, \$52,282; Lafayette Engineering Co., Lafayette, Ind., \$61,500; Grosvenor plan, \$63,000, and \$61,000 on other plans; Attica Bridge Co., Attica, Ind., steel, \$47,097; Elkhart Bridge Co., Elkhart, Ind., steel, \$48,000.

**Lynn, Mass.**—For rebuilding Fox Hill bridge over Saugus River, between Lynn and Fox Hill, to Snare & Triest Co., 143 Liberty st., New York City, N. Y., for \$124,972.

**Gulfport, Miss.**—By Board of Supervisors, to Austin Bros., for building of Biloxi River bridge, at a cost of \$5,000.

**Kansas City, Mo.**—For construction of 45-ft. reinforced concrete bridge on Independence rd., by County Court, to Canton Bridge Co., Canton, O., at \$8,149.

**Lincoln, Neb.**—For constructing concrete bridges and culverts as needed during the year, to Lincoln Construction Co., Lincoln.

**Lancaster, N. Y.**—By Corry Bridge Co., Corry, Pa., at \$11,495, for construc-

tion of bridge over Cayuga Creek, on Aurora st., Lancaster.

**East Hamilton, O.**—To Al S. Fox, of Dayton, by County Commissioners of Butler County, for construction of new bridge over Miami and Erie Canal, at Grand blvd., East Hamilton, the consideration being \$9,927, and estimated cost \$12,500.

**Lisbon, O.**—For building of concrete bridge at bridge site 784 in Hanover Township, by Commissioners, to F. L. Cox, of Kensington, at price of \$1,064.10.

**Mt. Vernon, O.**—By Board of Commissioners of Knox County, for construction of Shira bridge, as follows: Superstructure, Mt. Vernon Bridge Co., \$1,790; substructure, Elmer Doup, \$675.

**Norristown, Pa.**—To Harry A. Bender, of Harrisburg, for constructing bridge over Schuylkill River at Norristown.

**Greenville, S. C.**—By City, to J. R. Lawrence, to construct concrete bridge over Academy Run in City Park.

**Olivet, S. Dak.**—For construction of all bridges in Hutchinson County during year 1912, to Federal Bridge Co., Des Moines, Iowa.

**Portage, Wis.**—For superstructure of steel drawbridge over Fox River, connecting townships of Buffalo and Moundville, Columbia County, to Worden-Allen Co., Point Washington rd., Milwaukee. Contract for foundations and abutments was awarded to Kutze Bros., Portage.

**London, England.**—By India office, for steel work required in connection with State railway bridge over River Jumna at Hamilpur Station, near Allahabad, to Phoenix Bridge Co., of Phoenixville, Pa. Twelve leading bridge building firms of Great Britain and North America tendered bids. There was difference of 26½ per cent. in amount of Phoenix company's bid and lowest British tender.

### MISCELLANEOUS

**Phoenix, Ariz.**—Construction of new court house and city hall is being discussed.

**Los Angeles, Cal.**—Erection of public comfort station for north end of city is recommended.

**Los Angeles, Cal.**—Municipal lodging house and municipal farm are asked by Police Commission in annual budget for Police Department. Budget has been approved by Commission and forwarded to City Council.

**Los Angeles, Cal.**—Appropriation of \$50,000 with which to establish public bath house will be asked of City Council by Playground Commission.

**Hartford, Conn.**—Appropriation of \$1,100,000 has been passed for new municipal building.

**Hartford, Conn.**—Appropriation of \$25,000 has been passed for new police telegraph system.

**Fort Wayne, Ind.**—Improvement of Lakeside Park is being discussed.

**Albany, N. Y.**—Appropriation of \$50,000 has been granted for State Reformatory.

**Boston, Mass.**—Council has passed orders appropriating \$150,000 for garbage receiving stations and \$15,000 to buy site for reduction plant on Spectacle Island. Order was passed appropriating \$4,100 from reserve fund for pier improvements on Castle Island.

**Amsterdam, N. Y.**—It has been decided to have Commissioner of Public Works have steam roller repaired at cost not exceeding \$1,000.

**Amsterdam, N. Y.**—Resolution has been adopted to allow Commissioner of Public Works Dwyer to purchase automobile for sum not exceeding \$1,000 for use in that department.

**Buffalo, N. Y.**—Favorable action has been taken by Councilmen on report of Public Ground Committee of Aldermen recommending purchase of additional ground for enlargement of Lanigan Park, extending from Elk to Fulton sts., near Louisiana, at price of \$43,900.

**Port Jervis, N. Y.**—Council has voted in favor of purchase of Buffalo-Pitts steam road roller at cost of \$2,750.

**Rochester, N. Y.**—Bids will be received by Board of Contract and Supply for automobile for Health Bureau.

**Rochester, N. Y.**—Approval has been given to purchase of 12½ acres of land for park purposes at Cobb's Hill.

**Rochester, N. Y.**—Secretary Pifer has been instructed to readvertise for bids on general sprinkling contract for present year, bids received by Board at meeting two weeks ago being declared excessive.

**Schenectady, N. Y.**—City will lay in supply of cement and dealers are asked to send in bids to Board of Contract and Supply. Cement is for Department of Public Works and is to be used in municipal construction work. Local dealers are urged to submit bids. Contract will be for any amount of cement from 100 to 4,000 barrels.

**Syracuse, N. Y.**—Resolutions have been adopted by Board of Supervisors for purchase of 10-ton road roller and automobile for use of Highway Department, estimated cost of both being \$5,600.

**Yonkers, N. Y.**—New crematory will be erected upon site of present one.

**Yonkers, N. Y.**—Resolution is being considered for widening, deepening and straightening of saw Mill River.

**Newark, O.**—Health officers have reported to City Council that more modern means will have to be adopted for disposal of garbage. Special committee of six has been appointed to investigate and report. Dr. W. H. Knauss, Health Officer.

**Bacine, Wis.**—Sites are being considered for erection of new garbage incinerator.

### CONTRACTS AWARDED

**Los Angeles, Cal.**—By Board of Public Works, for Hill st. traffic tunnel, to Wattson & Spicer. Contract price is \$126,079.60.

**Washington, D. C.**—To Columbia Granite & Dredging Co. of this city, for building riprap sea wall along left bulkhead line of Anacostia River, between District outfall sewer and Anacostia bridge, distance of about 4,000 ft., at total cost for labor and material of \$71,380.

**Lawrence, Mass.**—For furnishing city with 2,000 ft. of edgestone, to Thomas Rafferty, of Graniteville, by Purchasing Agent Hugh S. McConnor, at 41 cts. per lin. ft., f. o. b. cars Lawrence. Bids received were as follows: Frank A. Mallory, of North Chelmsford, 25 cts. per lin. ft. on the railroad track, Lawrence, and 47 cts. per lin. ft. if delivered; L. P. Palmer, of Graniteville, 41½ cts. per lin. ft.; P. A. Carlin, of North Chelmsford, 41½ cts. per lin. ft.; Thomas Rafferty, of Graniteville, 41 cts. per lin. ft., f. o. b. cars; John J. O'Brien, Lawrence, 50 cts. per lin. ft.; Hildreth Granite Co., of Boston, 45 cts. per lin. ft.; O. N. Trussell, Lawrence, 52 cts. per lin. ft.; John Marinal, of North Chelmsford, 43 cts. per lin. ft.

**Taunton, Mass.**—By Committee on Streets and Bridges, for rebuilding fence along bank wall, adjacent to river on Dean st., to Eugene P. Bassett.

**Jersey City, N. J.**—By Street and Water Board, for seven-passenger car automobile which will be used by Commissioners in inspecting city improvements and visiting water works at Boonton, to Crescent Automobile Co., which will furnish Cadillac car for \$3,185.20.

**Gloucester, N. J.**—For construction of new pier in front of immigration station, to E. F. Fonder, of Philadelphia, at \$74,600.

**New York, N. Y.**—By Public Service Commission, for constructing Section 2A of Broadway-Lexington ave. subway, to O'Rourke Engineering Construction Co., of 345 Fifth ave., Manhattan. Section extends from Walker to Howard sts. and takes in Canal st. station. Bid of O'Rourke company was \$912,351.60.

**Youngstown, O.**—For wiring in underground conduits on Market st., to Standard Underground Cable Co., of Pittsburgh. Company will install 3,680 ft. of No. 25 copper wire at 20.6 cts. per ft. and 1,000 ft. of No. 6 copper wire at 7.6 cts. per ft. Wiring is to consist of intelligence cables to be used in city's fire and police alarm systems.

**Chester, Pa.**—For gathering ashes, to Chester Contracting & Reduction Co., for five years, at \$21,000.

## TOO LATE FOR CLASSIFICATION

### BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS.</b>				
California...	Oakland.....	Apr. 15, noon.....	Imp. a number of streets.....	F. R. Thompson, City Clk.
Ohio.....	McArthur.....	Apr. 17, noon.....	Constrn. 3.24 miles macadam.....	J. R. Marker, Highway Comr.
Ohio.....	Cambridge.....	Apr. 19, 10 a.m.....	Pavg. 2 miles road with brick.....	J. R. Marker, Highway Comr.
Ohio.....	Coshocton.....	Apr. 22, 10 a.m.....	Constrn. 2.37 miles macadam with bit. surface.....	J. R. Marker, Highway Comr.
Ohio.....	Upper Sandusky.....	Apr. 23, 10 a.m.....	Constrn. 2 miles macadam.....	J. R. Marker, Highway Comr.
Ohio.....	Mt. Gilead.....	Apr. 24, 10 a.m.....	Constrn. 3 miles macadam with bit. surface.....	J. R. Marker, Highway Comr.
Ohio.....	Cincinnati.....	Apr. 26, noon.....	Imp. Fallis road.....	Stanley Struble, Pres. Co. Comrs.
Ohio.....	Carrollton.....	Apr. 27, 9 a.m.....	Pavg. 2.36 miles road with brick.....	J. R. Marker, Highway Comr.
New York....	Elmira.....	Apr. 29, 11 a.m.....	Constrn. 12,270 yds. brick, asphalt or wood pav't.....	O. H. Gardner, City Clk.
<b>SEWERAGE</b>				
New Jersey...	Camden.....	Apr. 15, 8 a.m.....	Constrn. sewers in five streets.....	Joshua Haines, Chm. Comm.
California...	Oakland.....	Apr. 15, 11 a.m.....	Constrn. sewers in a number of streets.....	F. R. Thompson, City Clk.
New Jersey...	Monmouth Beach.....	Apr. 22, 8 p.m.....	Constrn. sewers, disposal plant and pumping station.....	J. W. Potter, Boro. Clk.; Clyde Potts, Engr., 30 Church St., New York.
<b>WATER SUPPLY</b>				
New York....	Rochester.....	Apr. 13, noon.....	Constrn. pump house in park.....	W. S. Riley, Chm.
<b>LIGHTING AND POWER</b>				
Indiana.....	Michigan City...	Apr. 16, 10 a.m.....	Install. ornamental lighting system; cost, \$9,500.....	Board Public Works.
<b>FIRE EQUIPMENT</b>				
Canada.....	Vancouver, B. C.	May 1.....	Furn. 2 auto pump, engs., 2 serv. trucks, 1 chemical, 3 hose wagons, auto aerial ladder truck, chief's car; also poles and nozzles, \$8,000.....	Fire Chief Carlisle.
<b>BRIDGES</b>				
Ohio.....	Springfield.....	Apr. 19.....	Constrn. concrete arch bridge.....	Board Control.
Indiana.....	Vincennes.....	May 7, 2 p.m.....	Constrn. 9 bridges.....	J. P. Scott, County Aud.
<b>MISCELLANEOUS</b>				
Kansas.....	Ottawa.....	Apr. 17, 7.30 p.m.....	Constrn. incinerator; capacity, 5 to 15 tons.....	W. T. Wood, Mayor.
Indiana.....	Indianapolis.....	Apr. 23, 10 a.m.....	Furn. culvert pipe.....	W. T. Patten, County Aud.